COPYRIGHT.
JUL 9 1884
28101

—MONTHLY NUMBER.—

THE AMERICAN ARCHITECT AND BUILDING NEWS

A WEEKLY JOURNAL OF CONSTRUCTIVE AND DECORATIVE ART.

VOL. XVI.—No. 445.] SATURDAY, JULY 5, 1884. [PRICE, 15 CENTS.

BARTLETT, HAYWARD & CO.
(Established, 1836.)
ARCHITECTURAL IRON-WORK,
HOT-WATER HEATING.
Plans and Specifications and the Superintendence of the Heating and Ventilation of Public Buildings a specialty.
BALTIMORE, MD.

SYPHER & CO.
Designers and Manufacturers of
ARTISTIC FURNITURE.
Importers of Antique Cabinet Work of the best Old English, French, Flemish, and Italian periods, as well as choice works of Art
IN EVERY DEPARTMENT FOR HOME ADORNMENT.
SPECIAL ATTENTION
paid to interior decoration and estimates furnished to architects.
NORTH EAST COR. BROADWAY, AND 17th STREEN, UNION SQUARE, NEW YORK.

[ESTABLISHED 1866.]
NOVELTIES IN CARPETS,
STANDARD, FOREIGN AND DOMESTIC,
RUGS, MATS and WINDOW-SHADES.
Communications Solicited.
H. A. HARTLEY & CO., BOSTON, MASS.
95 TO 105 WASHINGTON STREET.

T. ASPINWALL & SON,
TILES of all descriptions for Floors, Walls, Hearths, Fireplaces and Decoration generally.
MANTELS, GRATES, AND OPEN FIREPLACES.
BRASS FENDERS, ANDIRONS, ETC.
Sole Agents for, and only direct importers of
MINTON'S and the CAMPBELL TILE CO.'S TILES.
75 & 77 W. 23d St., (Masonic Temple) NEW YORK.

PHOTOGRAPHS.
NEW SETS JUST ISSUED.
Set No. 5, 26 Views of Elegant Residence Interiors.
" " 6, 26 " Suburban Homes, (of moderate cost.)
" " 7, 26 " Chicago and Milwaukee Residences, (just built).
$12.00 per set. $10.50 unmounted.
Freights paid if Cash accompanies your Order.
J. W. TAYLOR,
ARCHITECTURAL BOOKSELLER AND PUBLISHER,
146 LA SALLE ST., CHICAGO.

OHIO BUILDING STONE CO.
QUARRYMEN AND DEALERS IN
BUFF AND BLUE OHIO SANDSTONE.
OFFICES:
127 SUPERIOR STREET, CLEVELAND, O.
BRANCH OFFICES:
247 BROADWAY, NEW YORK, N. Y.
350 FIFTH AVENUE, CHICAGO, ILL.
49 FIFTH AVENUE, PITTSBURGH, PA.

OXLEY, GIDDINGS & ENOS,
Designers and Manufacturers of
GAS-FIXTURES,
ART METAL-WORK,
CLOCKS AND BRONZES,
Special designs and estimates furnished upon application.
Architects' patronage most respectfully solicited.
224-230 CANAL STREET, 120-126 WALKER STREET, } NEW YORK.

SPANISH TILES "NOLLA'S."
The best colors and hardness ever produced in Flooring Tiles. *Original Designs for every Work.*
FERNANDO MIRANDA, Sole Agent in U. S.
92 Liberty Street, New York, N. Y.

CHARLES R. YANDELL & CO.,
MANUFACTURERS OF
ILLUMINATED LEATHERS
AND HAND-PAINTED WALL-PAPERS,
Select Textile Fabrics, Choice Furniture,
Dealers in Antique Spanish Leathers, Bric-à-brac, etc.
DECORATIVE ARTISTS.
No. 6 EAST EIGHTEENTH ST., NEW YORK.
Near Fifth Avenue.

Established 1817.
JOHN H. PRAY, SONS & CO.,
FOREIGN AND DOMESTIC
CARPETINGS AND RUGS.
Correspondence specially invited.
558 WASHINGTON STREET, BOSTON, MASS.

MITCHELL, VANCE & CO.
Designers and Manufacturers of
GAS FIXTURES,
ORNAMENTAL METAL WORK, CLOCKS AND BRONZES.
ARCHITECTS' ORDERS SOLICITED.
Special designs submitted on application.
WAREROOMS, 836 and 838 BROADWAY,
MANUFACTORY, 24th and 25th STS. and 10th AVENUE,
NEW YORK.

AMERICAN ENCAUSTIC TILE.
Acknowledged by experts to be
THE BEST IN THE WORLD.
Manufactured by the
AMERICAN ENCAUSTIC TILING CO. (Limited).
OFFICE & SALESROOM, 116 WEST 23D ST., N. Y.
Designs and Estimates for Public Buildings, Halls, Churches, Vestibules, and for External Decoration, Bath-room, Stove, and Furniture Decorations.
GLAZED AND ENAMELLED TILES
FOR MANTELS HEARTHS WAINSCOTING, ETC.

JAMES P. WOOD & CO.
JAMES P. WOOD. JOSEPH WOOD.
STEAM-HEATING, VENTILATING AND COOKING APPARATUS, ETC.
39 SOUTH FOURTH STREET, PHILADELPHIA, PA.

SEYSSEL ROCK ASPHALT.
FOR SIDEWALKS, FLOORS, CELLARS, ROOFS, ETC.
BITUMEN DAMP COURSE.
DAMP RESISTING SOLUTION.
ACTINOLITE ROOFS,
29 Waverley Place, NEW YORK. } E. H. WOOTTON N. Y. Mastic Works. { Arcade Bldg, R'ms 14, 16 & 17, CHICAGO.

MINTON'S TILES.
PLAIN AND ENCAUSTIC,
FOR PUBLIC BUILDINGS AND DWELLINGS,
As laid by us in
THE CAPITOLS AT WASHINGTON & ALBANY,
And in numerous Churches, Banks, and Dwellings in every part of the country.
Glazed and Enamelled Tiles for Mantels, Hearths Wainscoting, etc., and for Exterior Decoration.
MILLER & COATES,
279 PEARL STREET, NEW YORK.

ROBERT C. FISHER,
Successor to FISHER & BIRD,
MARBLE AND GRANITE WORKS
97, 99, 101 and 103 EAST HOUSTON STREET.
Established 1834. NEW YORK

THE UNITED STATES ENCAUSTIC TILE CO., Indianapolis, Ind.
PLAIN, GEOMETRICAL & ENCAUSTIC
TILES, FOR FLOORS
Public Buildings and Private Residences.
HIGH ART MAJOLICA TILES for Mantel Facings, Friezes, Furniture, etc.
GLAZED & ENAMELLED TILES for Hearths, Stoves, Wainscoting, etc.
Designs and Estimates furnished upon application.
New Pattern Book and Price List just issued.

RENDLE'S
PATENT "ACME" GLAZING
FOR SKYLIGHTS,
CONSERVATORIES,
GREENHOUSES, Etc.
Illustrated Catalogues free on application.
Estimates promptly furnished.
ARTHUR E. RENDLE, 10 HORATIO ST., NEW YORK.
(Late of 7 Warren St.)

WHITTIER MACHINE CO.
Manufacturers of Steam and Hydraulic
ELEVATORS,
STEAM ENGINES, BOILERS, AND MACHINERY.
1176 TREMONT STREET, BOSTON
CHAS. WHITTIER, *Pres't.* A. C. WHITTIER, *Treas.*

L. S. GRAVES & SON,
PASSENGER AND FREIGHT
ELEVATORS.
NOISELESS, SAFE AND DURABLE,
CENTRE STREET, ROCHESTER, NEW YORK.
NEW YORK OFFICE, 46 COURTLAND STREET.

STOKES & PARRISH,
30th & CHESTNUT STS., PHILADELPHIA, PA.
Hydraulic and Steam-Power
ELEVATORS.
SAFETY, SPEED, AND ECONOMY.
All kinds of Hoisting Machinery a specialty.
NEW YORK OFFICE, - - 95 & 97 LIBERTY STREET.

CRANE'S
VICTORIOUS HYDRAULIC AND HIGH SPEED STEAM
ELEVATORS.
NEW YORK OFFICE, 92 & 94 LIBERTY ST.
BOSTON OFFICE, 10 OLIVER ST.
CHICAGO WORKS, 10 N. JEFFERSON ST.

OTIS
PASSENGER AND FREIGHT
ELEVATORS,
A SPECIALTY FOR A QUARTER OF A CENTURY.
For Hotels, Office-Buildings, Stores, Warehouses, Factories, Mines, Blast-Furnaces, etc
OTIS BROTHERS CO.,
NEW YORK, BOSTON, AND PHILADELPHIA.

POPULAR BECAUSE RELIABLE.

AUSTIN'S PATENT

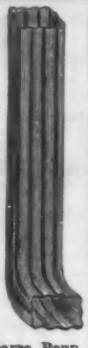
Expanding Conductor,

OR LEADER.

The ORIGINAL and only LEGITIMATE EXPANDING CONDUCTOR in the market, has been used for years and THOROUGHLY TESTED in all the PRINCIPAL CITIES and TOWNS in the UNITED STATES and is SPECIFIED by ARCHITECTS generally THROUGHOUT THE COUNTRY.

Austin, Obdyke & Co., Philadelphia,

SOLE MANUFACTURERS.



PRINCIPAL AGENTS.

S. D. Hicks & Son, ... Boston.	B. G. Carpenter & Co., ... Wilkesbarre, Penn.
M. Halliday, ... New York City.	The Miller Iron Co., ... Providence, R. I.
Bruce, Cook & Co., ... " "	Sanford Bros., ... Newark, N. J.
Sidney Shepard & Co., ... Buffalo, N. Y.	Knisely & Miller, ... Chicago.
Wasson & Martin, ... Albany, N. Y.	J. C. McFarland & Co., ... Chicago, Ill.
Hoy & Co., ... Albany, N. Y.	Wm. Fuller & Co., ... Baltimore, Md.
Reardon, Ennis & Co., ... Troy, N. Y.	W. R. Allen & Co., ... San Francisco, Cal.
Troy Stamping Works, ... Troy, N. Y.	Bakewell & Mullins, ... Salem, Ohio.
Chas. Millar & Son, ... Utica, N. Y.	Biersack & Neidermeyer, . . . Milwaukee, Wis.
W. H. Scott, ... Portland, Me.	The Blodgett & Clapp Co. . . . Hartford, Conn.
J. W. Jordan, ... Worcester, Mass.	

CARD.

By decisions of the U. S. Circuit Courts the *Exclusive Right* to manufacture *Expanding Conductors of any and all designs*, was secured to WILLIAM AUSTIN, and AUSTIN, OBDYKE & Co. are the only parties authorized to manufacture under Austin's Letters Patent, — all others will be considered and treated as

INFRINGERS.

THE ONLY REAL

Expanding Conductor.

Guaranteed no Infringement.

The IRWIN & REBER PATENT

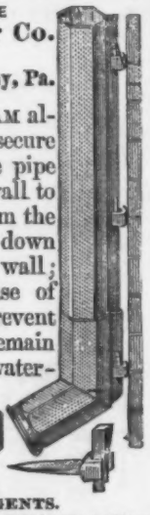
Expanding Water Conductor,

MANUFACTURED BY THE

S. S. S. Conductor Co.

LIMITED,

47 Federal St., Allegheny, Pa.



THE STANDING SEAM allows of an easy and secure fastening, keeping the pipe far enough from the wall to make any overflow from the cave pipe or head, run down the spout, and not the wall; and will open, in case of freezing, so as to prevent bursting, and still remain double-locked and water-tight.

PRINCIPAL AGENTS.

E. B. Badger & Son, Boston, Mass.; Noyes & Wines, New York; J. S. Thorn, Philadelphia; John G. Hetzell, Baltimore; R. P. Gormully, Chicago; F. Schmitt & Sons, Milwaukee; Shackelton Bros., Cleveland; G. H. Peters & Son, Buffalo, N. Y.; James Ackroyd, Albany, N. Y.; Witt & Brown, Cincinnati; Hull & Cozzens Man'f'g Co., St. Louis, A. K. Sweet, Kansas City Mo., and many others.

ALFRED BOOTE,

11 East 19th Street, New York.

TILES

Of all descriptions, from

MINTON'S, MAW'S, and BOOTE & CO'S.

MOSAICS in Stock and made to order from any design. Large Stock of

MANTELS, GRATES, & OPEN FIREPLACES.

Special designs made to suit customers free of charge Experienced men kept to set Mantels, Grates, and Tiles.

BUCKEYE BELL FOUNDRY.

Bells of Pure Copper and Tin for Churches, Schools, Fire Alarms, Farms, etc. FULLY WARRANTED. Catalogue sent Free.

VANDUZEN & TIFT, Cincinnati, O.

McSHANE BELL FOUNDRY

Manufacture those celebrated **Bells** and **Chimes** for **Churches, Tower Clocks**, &c., &c. Prices and Catalogues sent free.

Address

H. McSHANE and CO.,

Baltimore, - - - Md.

BEST CONDUCTOR OF ALL.

Ritchie's Patent

SPIRAL LOCK-SEAM PIPE.

Put together without Solder.

Each length a single perfect piece, not short lengths soldered together.

Will outlast any expanding conductor, and is far the cheapest and neatest pipe for spouts, ventilation or speaking tubes.

LAMB & RITCHIE,

Boston Spiral Tube Works,

Albany St., near Main St.,

CAMBRIDGEPORT, MASS.

A. L. FAUCHERE & CO.

Office and Warerooms,

433 AND 435 SEVENTH AVENUE, next to south-east corner Thirty-fourth Street,

Importers, Manufacturers, and Dealers in all kinds of

FOREIGN AND DOMESTIC

MARBLE FOR INTERIOR WORK.

Estimates furnished on application.

MINTON, HOLLINS & CO.,

STOKE-UPON-TRENT.

The original and existing Manufactory of

MINTON'S

Plain, Encaustic, Glazed, Enamelled, Majolica, Printed and Art-Painted Tiles, for Floors, Walls, Hearths, Mantels, Furniture, &c. Illustrated sheets of newest designs just issued.

SHARPLESS & WATTS, Agents,

No. 1325 MARKET STREET, PHILADELPHIA, PA.

Stained Glass.

W. J. McPHERSON,

PLAIN, DECORATIVE, DOMESTIC AND ECCLESIASTICAL

Stained & Leaded Glass Manufacturer.

440, 442 & 444 TREMONT STREET.

N. Y. Office: 26 Warren St., LINSLEY PIKE & CO.

"GLACIER"

STAINED GLASS.

A perfect substitute at a very small cost.

MANUFACTURED AT THE

LINENHALL WORKS, Belfast, Ireland.

A. B. H. CHAPIN, Agent,

52 Kilby Street, - - BOSTON.

Designs, from the simplest to the most elaborate, with all the beauty of the real stained glass, at about one-tenth the cost, easily applied and simply arranged to cover any space. Cannot be rubbed off the window or defaced by cleaning; once affixed and dried, it is insoluble in water, and will not crack, or leave the glass under the action of heat, cold, or moisture. Especially adapted for lights in stair-landings, fan-lights, door-panels, and side-lights; bath-rooms, conservatories, windows in churches, schools, libraries, etc., and wherever there is a disagreeable outlook. Send for illustrated circular and price-list. Safely forwarded by mail. All orders promptly filled.

Stained Glass.

REDDING, BAIRD & CO.,

SUCCESSORS TO COOK, REDDING & CO.,

Manufacturers of

STAINED GLASS

IN ALL ITS VARIETIES. IMPORTED

ROLLED CATHEDRAL GLASS

of our own importation furnished in any quantity and cut to size.

146 FRANKLIN ST., BOSTON, MASS.

SAMUEL WEST,

471 Tremont St., Boston,

Artist in Stained Glass

FOR ALL GRADES OF ORNAMENTATION.

Memorial Windows a specialty.

Awards of the highest merit for thirty years past.

METAL -WORKERS

IN BRASS, BRONZE, & STERLING SILVER.

ARTISTIC STAINED GLASS

* * * *

NEW DESIGNS. Send for Hand-Book, to

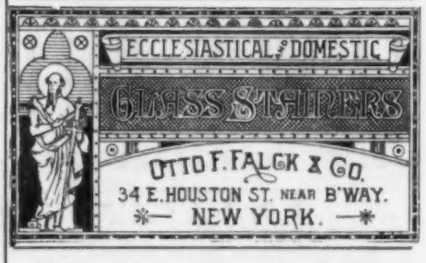
J & R. LAMB, 59 CARMINE ST., NEW YORK.

Stained-Glass Kilns.

W. D. Thompson of the firm of Thompson Bros., Leeds, England, (Patentees of the Gas Kiln), who is now in New York erecting kilns for Messrs. Herter Bros., Tiffany & Co., and others, will be glad to make appointments with any one desiring information respecting the working of the kilns, address, care of

MESSRS. J. & R. LAMB,

59 Carmine Street, - - - New York.



Donald MacDonald, Agt.,

Glass Stainer and Decorator.

Studio and Works, 400 Northampton St.

EST. LONDON, ENG., 1854.

Works, 20 W. 4th St., N. Y.

J. G. & J. F. LOW, Chelsea, Mass.

LOW'S ART TILES.

REPRESENTED BY

New York, Caryl Coleman, No. 9 East 17th St.
Chicago, Henry Dibblee, 266 and 268 Wabash Ave.
Boston, C. A. Wellington & Co., 44 Boylston St.
Cincinnati, C. S. Rankin & Co., West Pearl St.
Cleveland, A. S. Herenden Furniture Co., Bank St.
Detroit, Wm. Wright, Fort St. W.
Washington, Hayward & Hutchinson, Ninth St.
Baltimore, Baltimore Mantel Co., No. Howard St.
San Francisco, W. W. Montague & Co., Market St.
Minneapolis, Sullivan & Farnham, Third St., So.
Omaha, Milton Rogers & Sons, Farnam & 14th. Sts.
Louisville, J. V. Escott & Sons, Fourth Ave.
St. Louis, Seidel & Schoenle, So. Fifth St.
Milwaukee, Mathews Bros. Furniture Co., East Water Street.

Stained Glass.

The La Farge Decorative Art Co.

33 East 17th Street, New York.

Contracts taken large or small for

MEMORIAL STAINED GLASS WINDOWS,

Stained Glass of Every Description,

Mosaic, Repoussée, Wood Carvings, Embroideries, and Hangings, for either

Ecclesiastical or Domestic Purposes, and every kind of Interior Decoration for Public or Private Buildings.

Examples of Mr. La Farge's work may be seen at:— Trinity Church, Boston. St. Thomas's Church, N. Y. Memorial Hall, Harvard College. The Brick Church, N. Y. Garfield Memorial, at Williams College.

And the following private residences:— W. H. Vanderbilt, Cornelius Vanderbilt, N. Y. Cyrus W. Field. S. J. Tilden, N. Y. F. L. Ames, Boston.

HEALY & MILLET.
STAINED · GLASS · AND
INTERIOR · DECORATIONS

223-225 Wabash Ave., Chicago.

Forty-Eight.
GEO. R. CLARKE & CO.,
Art Furnishing Rooms,
48 Boylston Street - - Boston, Mass.
Stained Glass Designers & Workers.

Tiles for Floors, Walls, Hearths, Facings, etc. Tiles designed and painted to order. Marquetry Floors. Furniture Designers and Manufacturers. Designs and estimates furnished on application. Glass works on the premises.

S. S. MARSHALL & BROS.,
Manufacturers of
STAINED GLASS.
No. 62 CEDAR AVENUE, ALLEGHENY, PA.

McCULLY & MILES
STAINED GLASS
13-57&9 MADISON STREET
CORNER MICHIGAN AVENUE
CHICAGO ILLS

PAINTED TAPESTRIES,
Plush and Panels.
Estimates furnished. C. S. SAMUEL & CO.,
42 West 23d Street, New York.

STAINED GLASS
Art Works
OF
WM. COULTER & SON
101 & 103 E. 2ND ST.
CINCINNATI, O
ADD 1884

KELLEY & COMPANY,
ECCLESIASTICAL AND DOMESTIC
STAINED GLASS,
27 Pearl Street, Boston, Mass.

H. EDGAR HARTWELL
28 West 23d St., N. Y. City.
ART DESIGNERS and MANUFACTURERS.

CHOICE FURNITURE.
UNIQUE FRESCOES.
MOSAIC GLASS.
INTERIOR WOOD-WORK.

LOW'S ART TILES. Chelsea, Mass.

For Fire-Places, Hearths, Wainscoting, &c.

New York Office, **CARYL COLEMAN,** Agent, 9 East 17th St., between Broadway & 5th Ave., N.Y.

MANTELS AND GRATES.

Fine Brass Grates, Fenders, Andirons, Fire-Sets, etc.

General Agent LOW'S ART TILES.

FLOOR AND ORNAMENTAL TILE,
For Halls, Vestibules, Conservatories, Hotels, Banks, etc. Tile Facings and Hearths.

ORNAMENTAL METAL WORK.
Stable Fittings, Weather-Vanes, Crestings, Fountains, Vases, Drinking-Fountains, Chairs, Settees

HENRY DIBBLEE, 266 & 268 Wabash Ave., Chicago.

FOR SALE.

800,000 feet 1 inch. and 1 1-4 inch.

HARD-MAPLE FLOORING.

Also Ash and Walnut Ceiling, Quartered Sycamore, White Pine Flooring, Ceiling, and Finishing Lumber.

KILN-DRIED SHINGLES,
All 6 inch. wide and promiscuous widths.

Wm. M. DWIGHT & CO.,
DETROIT, MICH.

STEAM WARMING,

House and Office Warming a Specialty.

Estimates Furnished.

E. RUTZLER,
170 & 172 Centre St., New York, N. Y.

[Established 1816.]
WILLIAM STRUTHERS & SONS,
Contractors for the Marble-Work of new City Hall, Philadelphia,
Importers, Workers and Dealers in
Marbles, Granites
AND OTHER STONES.
Agents for the Caën Stone and Aubigny Quarries, France
PHILADELPHIA, PA.
☞ Sculptural Work a Specialty.
WM. STRUTHERS & SONS.

Select Your HARDWARE
From JAMES W. VINAL & CO.,
7 Dock Square, Boston.
Complete Stock. All Grades. Low Prices.

Decorators.

W. J. McPHERSON,
Established A. D., 1845.
Painter, Glazier, Designer, and Ecclesiastical
DECORATOR,
440, 442 and 444 Tremont Street.

FRANK HILL SMITH,
171 1-2 TREMONT STREET,
BOSTON.....MASS.

WM. HEALY & SON,
Decorative Painters,
BRIDGEPORT, CONN.

P. M. ALMINI.
FRESCO PAINTER.
243 WABASH AVE CHICAGO.

C. H. GEORGE, Importer.
PAPER HANGINGS.
Exclusive Upholstery Goods and Decorations.
152 5th Avenue, New York.

WALKER & THOMPSON,
Decorative Art Leather and
LEATHER PAPER.
Embossed, Illuminated and Plain Leather-Work of all kinds, for Furniture and Interior Decorations.
No. 4 BOND STREET, NEW YORK.

MASKINS
FINE DRAPERIES
RARE
CURTAIN FABRICS
IN CENTRAL
MUSIC HALL.
CHICAGO.

MODELLING, CARVING & DESIGNING
For Interior and Exterior Decoration. Bronze, Wood, Plaster, Stone and Marble.
J. HOLMES, Hotel Chapman, Boston.

DECORATIVE DESIGNS
of the first order are published monthly in
THE ART AMATEUR,
A Handsome Folio devoted to Home Art.

Besides its fully illustrated and critical reviews of passing art events and biographies of artists and decorators, and its valuable departments of "Furniture and Decoration," and "Answers to Correspondents," (full of suggestions), architects will find in the numerous supplement pages motives for all kinds of

INTERIOR DECORATION.

Terms, $4.00 a year. - Single copies, 35 cents.
Specimen copy sent for 25 cents if this journal is named.
MONTAGUE MARKS,
23 Union Square, NEW YORK, N. Y.

The Temporary Binder
Provided by us will keep your copies of the *American Architect* in PERFECTLY uninjured condition.

Potter's Mortar Material.

For laying Front Brick, Chimneys and Fireplaces **it has no Equal.**

FURNISHED IN RED, BLACK, OR GRAY. Send for Circulars.

AMERICAN SOAPSTONE FINISH CO., Providence, R. I.

P. O. BOX 35.

Annunciators, Electric.

EDWARDS & COMPANY,
(PATENT)
Electric Bells and Annunciators,
AUTOMATIC BURGLAR ALARMS, FIRE ALARMS, Etc.
Estimates for Electric Bells, Annunciators, Speaking-Tubes, Letter-Boxes, Door-Openers for Apartment-Houses, etc.
GAS-LIGHTING BY ELECTRICITY.
Factory: 4th Ave. and 144th St. Office: 41 Beaver St. N. Y.

Architectural Iron-Work.

T. H. BROOKS,
ARCHITECTURAL IRON-WORK,
ORNAMENTAL DIRECT RADIATORS,
IMPROVED INDIRECT RADIATORS
Cleveland, Ohio.

Architectural Sheet-Metal Work.

G. L. SWETT & CO.
PLAIN AND ORNAMENTAL
Sheet-Metal Work for Buildings,
Corrugated and Galvanized Iron Roofing, Ventilators, Copper Gutters, Cornices, Finials, etc.
PATENT METALLIC SKYLIGHTS.
N. B.—We warrant our Skylights to be Fire and Weather-Proof. They are the best made and are used by the Heliotype Printing Co., Notman Photographic Co., U. S. Sub-Treasury and Post-Office, and nearly all the principal buildings in Boston.
Manufactory, 295 Harrison Ave., cor. Motte St., Boston.

Cement, Portland.

BROOKS, SHOOBRIDGE & CO.
Best English Portland Cement.
Works: Grays, Essex, England.
New York Office: No. 7 Bowling Green.
Also Roman Cements, Fire-Brick, Felt, etc.

CEMENT, SELENITIC.

Selenitic Fire-Proof Building Co.,
Mathews Wharf, Marginal St., Chelsea.
ROBERT JACKSON, Manager.
The above Company are open to supply Hollow Blocks for fire-proof construction, in any thickness from three to six inches, perfectly dry and well seasoned and superior to any blocks in the Boston market. These blocks have been submitted to extreme tests for fire, by the Mass. Mechanic's Charitable Association and have withstood a compression test, by the U. S. testing machine, of 662 lbs. to the square inch. A large stock always on hand.

Decorative Glass by Sand Blast.

JOHN MATTHEWS,
First Avenue, Twenty-sixth and Twenty-seventh Streets, NEW YORK.
Sole licensees in New York of the TILGHMAN SAND BLAST.
Decorative Glass from Late Designs Executed by Sand Blast or Embossing Processes in a Superior Manner.
SHEET AND PLATE GLASS GROUND TO ORDER.
Send for Illustrated Catalogue or Estimates.

Fireplaces, Ash-Traps, and Grates.

EUREKA GRATE WORKS,
Manufacturers of
PATENT FIREPLACE LININGS,
Patent Self-closing Ash-Traps,
Grates of all kinds,
Iron Mantels, and Importers of Tiles.
CINCINNATI, OHIO.

Elevators and Hoisting Machinery.

STEPHEN A. MORSE. C. M. WILLIAMS. EDWIN F. MORSE
CLEM & MORSE,
Manufacturers and Builders of
Hydraulic, Steam, Belt and Hand-Power Passenger and Freight Elevators, Dumb-Waiters, Automatic Hatch-Doors, etc.
Sole owners of the right to apply the Heebner Patent Governor to Elevators and Hoisting Machinery. *Send for Illustrated Circular.*
Nos. 411 and 413 Cherry Street, Philadelphia, Pa.
Branch Office, 108 Liberty St., New York.

Inlaid Floors and Borders, Ceilings, Wainscotings, Mantels, Sideboards, Bookcases, Counters, etc.

W. E. WHEELER,
Successor to R. M. Hubbard & Co.
Established 1874.
Manufacturer of Hubbard's Patent
Inlaid Floors and Border.
The most beautiful and durable floor made. Hundreds of them in the finest houses in the country. Illustrated Catalogue sent free. Fine dwelling, office, and hotel interiors and Art Furniture from special designs. Drawings and estimates furnished on application.
84 to 96 Erie Street, Toledo, Ohio.

Iron Structures.

BOSTON BRIDGE WORKS,
D. H. ANDREWS, ENGINEER.
Office, ... 13 Pemberton Square Boston.
WROUGHT IRON TRUSSES,
BOX AND PLATE GIRDERS & BEAMS
For sustaining roofs, floors, walls, and other loads of all kinds, designed and built. Our long experience embraces the designing and construction of many wrought-iron structures, large and small, a conspicuous example of which may be examined in the wrought-iron trusses for roofs and floors of the Exhibition Building of the N. E. Manufacturers' and Mechanics' Institute, Boston.

Jail and House Iron-Work.

J. P. WALTON & CO.,
MANUFACTURERS OF
Jail and House Iron-Work,
Store-Fronts, Columns, Lintels, Sills, Joists, Anchors, Railings, Stairs, Bolts, Tree-Boxes, Balcouies, Gratings, Crestings, Doors, Shutters, Bedsteads, and all kinds of Iron-Work used in the construction of buildings.
North-West Corner of Culvert and Harrison Sts.,
CINCINNATI, OHIO.

Peerless Colors for Mortar.

PEERLESS COLORS FOR MORTAR,
BLACK, BROWN, BUFF, RED.
Brightest and Most Durable Colors Manufactured.
SEND FOR CIRCULAR.
SAMUEL H. FRENCH & CO.,
York Avenue and Callowhill Street, Philadelphia, Pa.

Steam Heating.

Page Steam Heater.
The Cheapest, Most Economical and Efficient Heater in the Market.
SPECIFICATIONS AND ESTIMATES FURNISHED.
Send for Circulars.
PAGE STEAM HEATING COMPANY,
NORWICH, CONN.

Temporary Binders.

TEMPORARY BINDERS.
No more complaints that some of their copies are missing need be made if subscribers will procure a Temporary Binder for the
American Architect and Building News.
Price, postpaid, $1.25.
J. R. Osgood & Co., 211 Tremont St., Boston.

THE TAHANTO MANUFACTURING COMPANY,
Manufacturers of Decorative Articles in Metal.
Friezes, Panels, Mantel-Facings, Bas-Reliefs, &c., from Original Designs or those furnished, for the interior Decoration of Dwelling-Houses, Public Buildings, Hotels, Elevator-Cabs, Parlor and Passenger Cars, Steamers, &c., in Copper, Brass, Bronze, and Silver, reproducing with exact fidelity natural objects or other models.
Special attention is called to the reproductions from natural leaves and flowers in the panels and tiles for furniture and interiors.
☞ Correspondence solicited and estimates furnished on application.
42 Battery march Street, Boston.
HAROLD PARKER, President. S. L. HOLDREGE, Treasurer.

BURDITT & WILLIAMS,
20 Dock Square,
BOSTON.
Unequalled Stock of Choice Hardware. Specifications figured and orders filled in all markets.

INSURANCE CO. OF NORTH AMERICA, - - of Philadelphia.

Cash Capital	$3,000,000.00
Reserve for Re-Insurance	2,156,781.63
Reserve for Unadjusted Losses and other Liabilities	473,492.82
Surplus over all Liabilities	3,350,778.61

Clocks.

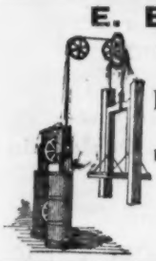
SETH THOMAS CLOCK CO.,
THOMASTON, CONN.,
20 MURRAY ST., NEW YORK.
TOWER CLOCKS.
SEND FOR CATALOGUE.

THE E. HOWARD
WATCH AND CLOCK COMPANY.
CLOCKS
OF ALL KINDS.
TOWER CLOCKS A SPECIALTY.
114 Tremont St., Boston. 2 Maiden Lane, New York.

Elevators.

Z. WILE,
PASSENGER AND FREIGHT ELEVATORS,
Hand-Hoists, etc., of the latest improved inventions now manufactured. Invalid Elevators a specialty.
Office, 193 Tremont Street, Boston.

Safety Elevators,
Passenger and Freight; Steam, Air, and Hand-Power. SHERRILL ROPER AIR ENGINE CO., 93 Washington St., New York.

E. BREWER,

267 Federal St., Boston.
Manufacturer of
Hydraulic Passenger ELEVATORS,
Hydraulic Dumb-Waiters, Freight and Hand Elevators.
Send for Circular as above.

LOUISVILLE
MACHINE AND ELEVATOR WORKS,
SULZER & VOGT, Proprietors,
Manufacturers and Dealers in all kinds of
ELEVATORS,
Nos. 717 to 731 East Main St.,
Between Clay and Shelby, LOUISVILLE, KY.

Established 1835.
E. E. McCALVEY,
Manufacturer and Builder of the latest improved Steam, Belt, and Hand-Power
Passenger & Freight Elevators.
Automatic Hatch-Doors. Also, Invalid Safety-Elevators, and Dumb Waiters for Hotels and Residences. Send for Illustrated Circular.
602 Cherry St., Philadelphia, Pa.

EATON & PRINCE,

MANUFACTURERS OF
Steam, Hydraulic, Worm-Gear, and Hand Elevators for Passenger and Freight Service.
ALSO
Shafting, Pulleys, Hangers and General Machinery.
Michigan Street, near Franklin, CHICAGO.
Send for catalogue and mention this paper.

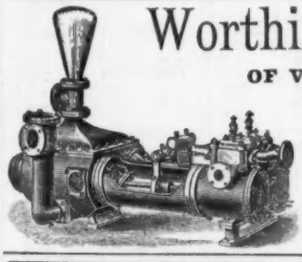
SHEPARD'S PATENT
HOD-ELEVATOR
For Brick and Mortar.
Something of interest to Architects and Builders.
Diploma and Medal awarded at Centennial.
Machines and Territory For Sale.
THOMAS DYER,
327 & 329 North Water St., Philadelphia, Pa.

LUDLOW-SAYLOR WIRE CO.,
No. 116 S. Fourth St., St. Louis, Mo.

IRON AND WIRE FENCES. WIRE CLOTH. WIRE ROPE.
Counter and Office Railings.
Iron and Wire Window-Guards.
Wire-Work of all kinds.

WIRE LATHING,
ESPECIALLY ADAPTED TO
Public Buildings, Private Residences, Mills, Warehouses, Stores, and all Mercantile Structures.
IT IS POSITIVELY FIRE-PROOF.
WIRE LATHING possesses the following qualities:
IT IS NOT COSTLY.
IT IS EASILY AND CHEAPLY APPLIED.
PLASTERING ON THE WIRE LATH WILL NOT CRACK.
THE LATH WILL NOT CORRODE.
The plastering, when applied, clinches on both sides of the wire, forming a double surface.
THE WIRE LATHING is extensively used by the United States Government in its Custom House, Court House, and Post Office Buildings.
It is indorsed by the leading Insurance Companies, who have applied it to their own fine edifices.
Full information given on application to the
CLINTON WIRE CLOTH CO., Clinton, Mass.
68 Beekman Street, New York. 148 Lake Street, Chicago.

ATLANTIC
White Lead and Linseed Oil.
ROBERT COLGATE & CO.,
GENERAL AGENTS,
287 Pearl Street, New York.


Worthington Steam Pumps.
OF VARIOUS TYPES AND PATTERNS.
SPECIAL PATTERNS
For Railway Water Stations, House Tank Service, Hydraulic Elevators, etc.
HENRY R. WORTHINGTON,
NEW YORK, BOSTON, CINCINNATI, CHICAGO, ST. LOUIS, SAN FRANCISCO

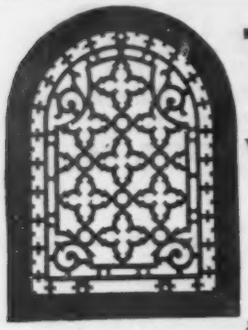
HANOVER FIRE INSURANCE CO.

Cash Capital	$1,000,000.00
Reserve for Re-insurance	635,741.16
Reserve for all other Liabilities,	96,655.57
Net Surplus	832,744.56
Total Assets, January 1, 1883	2,565,141.29

BUILDING MATERIALS.
Reported for the American Architect and Building News.

BRICK. — ℔ M.	New York. (*Wholesale Prices.*)	Boston.	Chicago. (*Prices to Builders and Contractors.*)	Philadelphia.
Common: *Cargo afloat.*				
Pale	$2 75 @ $3 50	Eastern	Building Brick	Hard
Jersey	5 00 @ 5 25	7 50 @ 8 50	7 50 @ 8 00	8 50 @ 9 00
Long Island	5 50 @ 6 00	Bay State Hard	Sewer Brick	Salmon
Up River	5 00 @ 5 75	9 00		6 00 @ 7 00
Haverstraw Bay	6 00 @ 6 50	Domestic Com.	Indiana Pressd	Stretchers
" 1st	6 50 7 00	8 00 @ 9 00	16 00 @ 28 00	11 00 @ 14 00
		Domestic Face	St. Louis Fronts	Pressed
		@ 18 00	25 00 @ 35 00	22 00 @ 26 00
Fronts:				
Croton, Brown	13 @ 14 00	Philadelphia		
" dark	14 @ 15 00	43 00 @ 45 00		
" red	14 @ 15 00	Phila. mould		
Chicago pressed		50 00 @ 80 00	22 00 @ 35 00	
Chicago Moulded			65 00 @ 350 00	
Baltimore	37 @ 41 00		50 00 @	
Glens Falls — white	30 @ 35 00	Glens Falls		
Philadelphia	@ 27 00	25 00 @ 26 00	42 00 @	
Trenton	@ 27 00		40 00 @	
Milwaukee		Glens Falls	25 00 @	
Moulded:		Mould.	60 00 @ 100 00	
Clark's Glens Falls — Red	25 00 @ 27 00	30 00 @ 35 00	30 @	
" — White	30 00 @ 35 00	35 00 @ 40 00	35 @	
" Mold, — Red or White	45 00 @ 60 00	45 00 @ 60 00	53 @ 65	
Enamelled: *Imp.*				
Enamelled (edge.)	85 00 @ 100 00	@	@ 100 00	Dom. @ 76
Enamelled (edge and end)	90 00 @ 115 00	@	@ 125 00	@ 85
CEMENT, LIME, etc.—(℔ *cask.*)				
Chicago Lime in bulk			65 @ 75	
Wisconsin "			80 @ 90	
Rosendale Cement	1 00 @ 1 10	1 60 @ 1 50	*Not Sold.*	1 35 @ 1 75
Utica, Akron, Buffalo, Louisville, Milwaukee	*Not sold.*	*Not sold.*	1 00 @ 1 25	*Not sold.*
Portland (English)	2 60 @ 3 10	@ 3 50	2 75 @ 3 00	2 50 @ 3 50
" (Saylor's Am.)	2 05 @ 2 40	2 50 @ 3 00	2 75 @ 3 00	2 50 @ 3 00
" (Dyckerhoff)	2 75 @ 3 15	3 00 @ 3 50	3 25 @ 3 75	3 00 @ 3 25
" (Lafarge)	3 50 @ 3 75	*Not sold.*	3 75 @ 4 25	4 50 @
" (Star)	2 70 @ 3 00	*Not sold.*	*Not sold.*	*Not sold.*
K. B. & S. (Eng.) Portland	2 85 @ 3 10		3 35 @ 3 50	3 00 @ 3 25
Burham " "	2 60 @ 2 80		3 15 @ 3 35	2 75 @ 3 00
Vorwohler	2 65 @ 3 25		3 00 @ 3 25	
German (Fewer)	2 50 @ 2 70		3 10 @ 3 30	2 75 @ 3 00
" (Alsen)	2 50 @ 2 80			
Selenitic		1 65	*Not sold.*	
Hydraulic Lime of Teil	3 50 @ 4 00		*Not sold.*	
Roman	2 75 @ 3 00	3 50 @ 4 00	2 75 @ 2 25	3 25 @ 3 50
Keene's coarse	5 00 @ 6 00	7 50 @ 9 00	7 50 @ 9 00	6 50 @ 7 00
" fine	9 25 @ 10 25	11 00 @ 12 50	11 00 @ 12 50	11 50 @ 12 00
Lime:				
Rockland and Rockport, (Com.)	@ 95	1 10 @ 1 15	*Not sold.*	1 00 @ 1 25
Rockland and Rockport, finish	@ 1 10		*Not sold.*	
State, com. cargo rates (nom.)	75 @ 80	*Not sold.*	*Not sold.*	*Not sold.*
State, finishing "	@ 1 00	*Not sold.*	*Not sold.*	*Not sold.*
Canaan, Conn	— —		*Not sold.*	
Glens Falls (State)	— —		*Not sold.*	
Plaster of Paris (calcined)	1 30 @ 1 35	1 75 @	@ 1 75	1 60 @ 2 25
" (casting)	1 50 @ 1 65	@ 1 90	@ 2 00	2 25 @ 2 50
Hair (Cattle) ℔ *bush.*	25 @ 28	20 @ 25	30 @ 35	25 @ 33
" (Goat)	32 @ 35		35 @ 40	@
Sand, ℔ *load*	1 00 @ 1 25	1 00 @ 1 50	100 @ 1 25	75 @ 1 50
STONE. (℔ *cubic foot, rough.*)				
Granite: (*Maine*)		60 @ 1 00		
Limestone:				
Bedford	@ 1 00	—	50 @	3 75 @
Joliet	@		35 @ 55	
Lemont	@	@ 1 00	35 @ 60	
Serpentine		—	80 @ 90	

(*Continued on page vi.*



— THE —

Tuttle & Bailey M'f'g Co.

MANUFACTURERS OF

WARM AIR REGISTERS and VENTILATORS.

Unusual Sizes or Finish Made to Order from Architects' Drawings.

A SPECIALTY OF FINE

Brass, Real Bronze, Nickel and Enamelled Goods.

83 Beekman St., N. Y. No. 64 Union St., Boston.

BUILDING MATERIALS.

	New York. (Wholesale Prices.)	Boston. (Prices to Builders and Contractors.)	Chicago.	Philadelphia.
Foundation:				
Dimension		5 00 @ 6 00	20 @ 28	30 @ 5 00
Block		@ 5 00	8 50 ₱ cord.	50 @ 6 00
Rubble		@ 1 75	8 50 @	
Bluestone: (₱ *sq. ft.*)		₱ perch.		
Sidewalk	30 @ 5 00	30 @	75 @ 1 00	70 @ 90
Planed	50 @ 6 00		50 @ 1 00	1 10 @ 1 25
Sandstone,				
Brown	@ 1	@ 1 40	1 50 ₱ cub. ft.	
Amherst	@	@ 1 05	55 @ 65	70 @ 90
Beres	@	@ 1 05	45 @ 55	
Berlin	@ 1	@ 1 05	55 @ 65	
Bay of Fundy	@ 1	@ 1 00	*Not sold.*	
Belleville	@ 1 40	80 @ 1 00	"	
New Brunswick	@ 1 00	@ 90	"	
Caen	@	@ 80	"	
Marble:				
Lee, Mass.	@	1 75 @ 2 00	*Not sold.*	2 00 @ 2 50
Rutland, white	@	80 @ 1 05	3 50 @ 5 00	2 25 @ 2 50
Sutherland Falls	1 25 @ 1 75	1 25 @ 1 75	3 50 @ 5 00	1 50 @ 2 50
Glens Falls, black	@	75 @ 1 00	*Not sold.*	4 00 @ 4 50
Italian, blue-veined	@	40 @ 50	@ 4 40	— @ —
" Sienna	@	75 @ 2 00	*Not sold.*	3 25 @ 6 50
Tennessee, red	@	75 @ 2 00	@ 4 00	2 00 @ 3 00
" Knoxville	@	50 @ 60	@ 4 00	@ 1 50
Pennsylvania, blue	@		*Not sold.*	2 23 @ 2 50
Vermont, white	@	1 50 @ 2 00	3 50 @ 5 00	
Slate:				
Roofing, (₱ *square*)	@			
" green	7 00 @ 8 00	4 50 @ 7 00	6 25 @ 8 10	@ 7 00
" purple	7 00 @ 8 50	4 50 @ 7 00	@ 8 60	@ 7 00
" red	@ 15 00	12 00 @ 13 00	— @ 16 00	5 00 @ 5 75
" black, Lehigh	— @ —	*Not sold.*	7 20 @ 7 60	5 00 @ 5 75
" " Chapmans	— @ —	*Not sold.*	7 30 @ 8 00	6 00 @ 6 25
Tiles, Am. ₱ M.	@		*Not sold.*	@ 15 00
LUMBER.—₱ M. *(Ordinary dimensions.)*				
Boards:				
Pine, 1st quality, clear	65 00 @ 75 00	53 00 @ 54 00	47 00 @ 49 00	
" 2d quality	55 00 @ 60 00	45 00 @ 48 00	42 00 @ 47 00	
" 3d quality	18 00 @ 22 00	38 00 @ 42 00	41 00 @ 45 00	
Spruce	@ 25 00	14 00 @ 17 00	*Not sold.*	
Hemlock	ea. 17 @ 18	11 00 @ 13 50	@ 10 00	12 50 @ 15 00
Yellow pine	20 @ 40	32 00 @ 36 00	@ 28 00	16 00 @ 18 50
Clapboards:				
Pine	@	35 00 @ 45 00	14 00 @ 22 00	—@—
Spruce	@	26 00 @ 50 00	*Not sold.*	—@—
Framing Timber:				
Pine		30 00 @ 40 00	13 00 @ 15 50	25 00 @ 35 00
Spruce	14 00 @ 18 00	13 00 @ 16 50	*Not sold.*	20 00 @ 22 00
Hemlock	12 00 @ 15 00	8 00 @ 15 00	13 00 @ 19 00	12 50 @ 14 00
Yellow pine	20 00 @ 30 00	25 00 @ 32 00		24 00 @ 26 00
Laths:				
Pine	@ 2 00	@ 3 00	2 25 @	—@—
Spruce		@ 2 50	*Not sold.*	3 00 @ 3 25
Shingles:				
Pine, shaved	5 00 @ 6 00	5 00 @ 7 00	*Not sold.*	
Pine, sawed	4 00 @ 5 00	4 25 @ 5 00	2 25 @ 2 60	
Spruce, sawed	2 50 @ 2 75	1 50 @ 1 75	*Not sold.*	
Redwood	2 10 @	4 00 @ 7 00	5 50 @ 8 00	30" $10 @ 28
Cedar, split	@	2 50 @ 5 50	*Not sold.*	24" 8 @ 21
Cedar, sawed	@	@ 3 75	@ 2 30	20" 5 50 @ 14
Cypress 7 x 24	18 00 @ 20 00		*Not sold.*	18 00 @ 20 00
Miscellaneous:				
Piles ₱ ft.	4½ @ 6	Piles 6c. ₱ ft.	*Not sold.*	
Fence pickets, Spruce	8 00 @ 10 00		Pine, 8 @ 22	80 @ 1 50
Cedar posts, 9 ft. (sq. posts.)	@		9 00 @ 21 00	70 @ 1 25
Chestnut	@		*Not sold.*	35 @ 40
Finishing Woods: ₱ M. *First Quality, Kiln-dried.)*				
Ash	@ 55 00	38 00 @ 42 00	35 00 @	
Cherry	60 00 @ 80 00	60 00 @ 70 00	75 00 @ 85 00	55 00 @ 65 00
Chestnut	@ 55 00	38 00 @ 42 00	45 00 @ 50 00	60 00 @ 80 00
Butternut	40 00 @ 60 00	60 00 @ 70 00	45 00 @ 60 00	55 00 @ 65 00
Mahogany, Baywood	@ 180 00	100 00 @ 150 00	@ 180 00	100 00 @
" St. Domingo	@ 250 00	180 00 @ 250 00	250 00 @ 300 00	
Maple	45 00 @ 50 00	40 00 @ 45 00	30 00 @ 35 00	30 00 @ 50 00
Oak, red	@ 70 00	30 00 @ 35 00	35 00 @ 40 00	35 00 @ 45 00
" white	@ 70 00	38 00 @ 42 00	35 00 @ 40 00	55 00 @ 65 00
" quartered	@ 90 00	55 00 @ 60 00	50 00 @	70 00 @ 80 00
Pine, clear	65 00 @ 70 00	45 00 @ 55 00	45 00 @ 50 00	65 00 @ 90 00
Redwood	70 00 @ 75 00	60 00 @ 70 00	60 00 @ 70 00	100 00 @
Rosewood ₱ lb.	@ 6		@ 7	
Walnut, black	125 00 @ 150 00	90 00 @ 120 00	85 00 @ 100 00	160 00 @ 200 00
Whitewood	45 00 @ 50 00	35 00 @ 38 00	32 00 @ 35 00	20 00 @ 30 00
Yellow pine ₱ M	@ 45 00	32 00 @ 36 00	32 00 @ 35 00	30 00 @ 35 00
Gumwood, best red		40 00 @ 70 00	30 00 @ 35 00	
PAINTS. *(In oil, ₱ lb.)*				
White lead, Am.	6½ @ 6½	6 @ 6½	06 @ 6½	4 @ 6½
" Zinc	5 @ 8½	11 @ 12	07 @ 11	4 @ 8
Red, Am.,	6 @ 6½	@ 12	*Not sold.*	
" Venetian	6 @ 10½	10 @ 12	1½ @ 2½	4 @ 6½
" Vermilion	55 @ 60	12 @ 20	50 @ 75	Am. 12 @ 16
Red Indian, Eng.	12 @ 20	13 @ 20	12 @ 20	12 @ 16
Yellow Ochre	6 @ 15	11 @ 12	3 @ 15	4 @ 9
" Chrome	12 @ 20	18 @ 25	12 @ 25	12 @ 25
Green (chrome)	8 @ 13	@ 18	8 @ 20	9 @ 14
Green, Paris,	16 @ 20	8 @ 12	16 @ 35	14 @ 20
Black, lamp,	8 @ 12	18 @ 20	8 @ 30	12 @ 18
Blue, ultramarine	12 @ 18	@ 28	10 @ 35	20 @ 35
Oil, linseed, (raw) (₱ *gal.*)	@ 58	54 @ 56	54 @ 57	56 @ 60
" " boiled	@ 61	59 @ 61	57 @ 60	59 @ 63
Turpentine	34 @ 35	@ 38	42 @ 45	38 @ 41
Varnish, coach	@	2 00 @ 6 50	1 25 @ 2 00	1 40 @ 4 00
Shellac	@	@	3 25 @ 4 00	1 75 @ 3 00
Putty	2 @ 3	2 @ 3	02 @ 03	2 @ 2½
Whiting (*dry*)	50 @ 90	@ 3	1 @ 2	½ @ 7-10
Paris white, (Eng.,)	1 30 @ 2 00	1 @ 1½	2 @ 2½	1 30 @ 1 60
Litharge, Am.	5½ @ 5½	2 @ 2½	6½ @ 10	6½ @ 7
Sienna, (burnt)	12 @ 17½	@ 18	4 @ 16	9 @ 14
Umber, "	11 @ 16½	@ 17	@ 10	9 @ 14

(*Continued on page* vii.)

FISCHER, LEAF & CO.

— MANUFACTURERS OF —

Marbleized-Iron and Slate Mantels, Grates, Stoves and Hollow-Ware, and dealers in

AMERICAN, ENGLISH and FRENCH TILE.

Send for Catalogue, and Prices

351 to 357 Jefferson St., Louisville, KENTUCKY.

Send for above new 52 page book containing illustrations of some of the finest residences in the country, together with complete information on the subject of Heating and Ventilation.

SMITH & ANTHONY STOVE COMPANY,

52 & 54 Union St., - - Boston, Mass

New York Agency, - - - 235 Water St.

Chicago Agent, C. E. Clark, 20 Lake St.

W. H. Harrison & Bro.

Manufacturers.

PLAIN AND ARTISTIC

GRATES

AND FIREPLACES

A SPECIALTY.

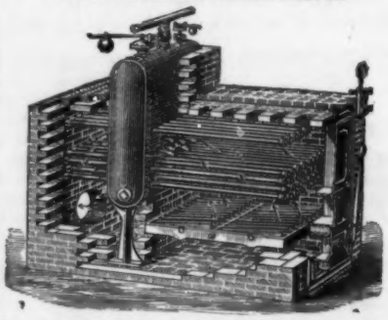
Also **Furnaces and Ranges.**

Send for Illustrated Catalogue. 1435 Chestnut St., Philadelphia

THE HOLLAND

Patent Wrought-Iron Boiler

FOR STEAM HEATING.



HOLLAND & THOMPSON, - - Troy, N. Y.

PETER BACKUS,

Steam Heating Apparatus,

For Public or Private Buildings.

Sole New York Depot For the Sale of the

Albany Steam Trap Co.'s Specialties.

133 & 135 W. 25th St., New York,

(Be 6th & 7th Aves.)

Heating and Ventilation.

Fire ON THE Hearth

OPEN STOVE VENTILATING CO. PURE AIR GUARANTEED HEALTH FIRE ON THE HEARTH

In various forms, viz: — **Air-Warming Grates, Fireplace Heaters, School-Room Heaters, Stoves, Double Heaters,** Each combining the ventilation of an open fire with the power and economy of a warm air furnace.

"Palace King Furnaces."

OPEN STOVE VENTILATING CO., 78 Beekman St., New York.

PIPE-COVERING.

This covering is made entirely of Asbestos, and can not be affected injuriously by heat or dampness, nor can it be made a harbor for vermin.

Asbestos Building-Felt, Fire-Proof Cements, &c.

THE CHALMERS-SPENCE CO.,
419-421 E. 8th Street. - - NEW YORK.

SLATE MANTELS

Of the latest and most beautiful designs, and all other Slate and Soapstone work on hand or made to order. JOSEPH S. MILLER & BROTHER, 1210 Ridge Avenue, Philadelphia, Pa. Successor to Wilson & Miller. Send for Illustrated Price-List.

THE PERRET PATENT FURNACES,

For burning Coal-dust, Sawdust, &c., will save from 50 to 90 per cent in your Fuel Account

Send for descriptive Circular.

GEORGE F. GELBACH,
MANUFACTURER,
2218 to 2224 Pennsylvania Ave.,
PHILADELPHIA, PA.

Also builder of Elevators, Engines, &c.

COLD'S

Electric Warm Air Wrought-Iron Heaters.
Sectional Boilers.

Steam Compound-Coil Wrought-Iron Circulating Heaters.
Pin Radiators.

Combined Water and Steam Wrought-Iron Heaters, heated by live or Exhaust Steam for Cars, Factories, Shops, Conservatories, Public and Private Buildings, etc.

Saving in fuel fifty per cent over any other system.
Plans, specifications, & estimates furnished on application.

Send for circulars.

EDWARD E. GOLD & CO.,
14-16 Vandewater St., between Pearl and Frankfort Sts., New York.

The GOODWIN GAS STOVE & METER CO.,

MANUFACTURERS OF

The Sun Dial Gas Cooking and Heating Stoves.

The most economical in use. Over 50 different kinds. Suitable for Families, Hotels, Restaurants and Public Institutions. Laundry, Hatters' and Tailors' Heaters. Hot-Plates, Warming-Closets for Pantries. Hot-Water Generators, etc., etc.

1012-1016 Filbert Street, Philadelphia.

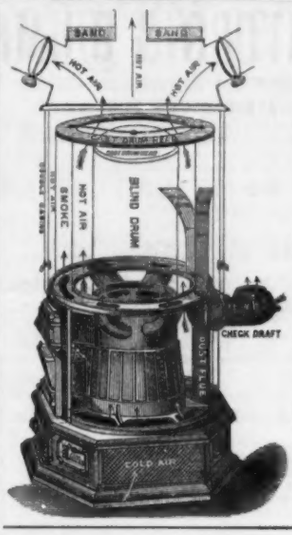
142 Chambers Street, New York.
126 Dearborn Street, Chicago.
Waldo Bros., Agts., 88 Water St., Boston, Mass.

HOTEL LAFAYETTE,

Broad & Chestnut Streets,
PHILADELPHIA.

Location unsurpassed, newly furnished and improved; 300 rooms; offers attractions superior to any Hotel in Philadelphia.

L. U. MALTBY, Proprietor.



It is our purpose that everybody shall know of

THE NOVELTY FURNACE

as its economy, prolonged durability and convenience, together with the cleanliness, secured by the dust-flue, and the sand-joints preventing all possibility of the escape of dust, gas or smoke assures

ITS SUPERIORITY AS A VENTILATING APPARATUS

which is due to its original, peculiar, and superior construction and arrangement of the heating surfaces to the extent that it exposes a greater space of surface than any of its competitors, all parts of which is economically raised to an even and high temperature for a period of prolonged duration enabling it to supply a large volume of pure, warm air constantly, an evidence of

ITS IMMENSE POWER

derived from one centre drum, directly over the fire filled with reflected, surrounded by an outer drum, with an air space between, the outer drum receiving the ignited gases and products of combustion from the fire through hollow arms leading into the bottom of the drum which are made to heat thoroughly the entire surface by an inverted partition, deflecting them toward the front where they rise and pass over the partition and out, securing a result that is

APPRECIATED BY THE PEOPLE EVERYWHERE

as the following testimonial to our customers will show.

CHICAGO, MAY 27, 1884.

MR. G. WAGNER.

DEAR SIR—The No. 36 Novelty Furnace which you placed in my house last fall has given complete satisfaction, and thoroughly warmed seven rooms and a hall when the thermometer was at its very lowest, which was 23° below zero part of the winter. I cheerfully recommend it to any one wanting a perfect and economical Heater. It is entirely free from all gas and dust, and easily controlled and managed. Yours respectfully, WM. BISHOP.

ABRAM COX STOVE CO., Manufacturers,
PHILADELPHIA.

Foundry, Westfield, Mass.

THE H. B. SMITH CO.,

MANUFACTURERS OF

The Union Steam and Water

HEATING APPARATUS,

For Public Buildings and Private Residences.

Also Manufacturers of

Reed's Improved Cast-Iron Radiators,

Mill's Safety Sectional Boilers,
Gold's Indirect Pin Radiators, etc.

Office and Warerooms, 137 Centre St., New York

JOHN DAVIS & CO., Contractors for STEAM HEATING & VENTILATING

For Stores, Hospitals, Factories and all Public Buildings. Estimates and specifications furnished for direct and indirect heat. Boilers of superior quality and design; also Steam Pumps, Iron Pipe and Fittings. Call or address

71 to 75 Michigan Street, CHICAGO.

BUILDING MATERIALS. HARDWARE. (Wholesale Prices.)	New York.	Boston. (Prices to Builders and Contractors.)	Chicago. (Prices to Builders and Contractors.)	Philadelphia. (Prices to Builders and Contractors.)
Nails: (Per Cask.)				
Spikes, (wrought.)	@ 3 75		3 50 @	@ 3 50
10d. common	@ 3 50	2 06 @	@ 2 60	@ 3 20
Shingle	@ 4 25	@ 4 15	@ 3 75	@ 3 95
Lath	@ 5 75	@ 5 75	@ 5 60	@ 4 70
(For finish nails add 50c. per cask.)			Add $1 50	Add 1 00 per cask
(For casing nails add 75c. per keg.)				
Butts: 4"x 4" .....(₱ doz. pairs.)				
Plain	@ 1 50	@ 1 30	65 @ 1 00	@ 1 30
Japanned	@ 2 50	@ 2 20	*Not sold.*	@ 1 75
Acorn, Japanned	@ 2 50	@ 2 60	2 00 @ 3 75	@ 2 00
Acorn, Boston finish....(₱pair.)	@ 75	@ 75	*Not sold.*	@ 65
Bronze metal	@ 2 00	plain 2 88	2 00 @ 3 25	@ 1 75
Brass (for cupboards)	@ 15	@ 15	@ 12	@ 15
Knobs: (₱ Set.)				
Mineral, best	@ 15	@ 10	8 @ 10	@ 10
Lava	@ 50	@ 75	65 @ 80	@ 1 00
Hematite	@	@ 38	31 @ 40	@ 27
Porcelain	@ 40	@ 15	25 @ 30	@ 30
Glass, solid	@	@ 50	*Not sold.*	*Not sold.*
Glass, silvered	@ 1 75	@ 88	@ 1 50	@ 1 75
Bronze metal	@ 4 00	1 00 @ 3 00	75 @ 2 50	90 @ 3 00
Brass	@ 3 00	@ 1 25	1 50 @ 3 00	@ 25
PLUMBERS' SUPPLIES. *(Subject to inaccessible discounts.)*				
Pipe: (Per Foot.)				
Cast-iron, 4", d'ble thick 5 ft. length	4 05 @	@ 75	75 @	@ 75
Cast Iron, 2" d'ble thick 5 ft. length	2 05 @	@ 35	35 @ 40%	@ 35
Cast Iron 4" single thick	3 04 @	@ 36	36 @ 40%	@ 36
" 2" "	1 05 @	@ 24	24 @ 40%	@ 24
Wrought-iron, plain, 2"	@	@ 46	46 @ 40%	@ 46
" " 1"	@	@ 19	19 @ 40%	@ 19
" " ½"	@	@ 11	11 @ 40%	@ 11
" enamelled 2"	@	@ 64	24 @ 40%	
" " 1" 45%	@	@ 28	28 @ 70%	
" " ½"	@	@ 15	25 @ 40%	
Galvanized-iron, 2"	@	@ 64	64 @ 40%	@ 64
" 1"	@	@ 28	28 @ 40%	@ 28
" ½"	@	@ 15	15 @ 40%	@ 15
Brass, drawn, ½"	@	@ 30	70 @ 25%	
" " ¼"	@	@ 25	75 @ 25%	
Lead: (Per lb.)			75 @ 25%	
Pipe 10%	6½ @	7½	6½ @	6½ @
Sheet 10%	7 @	8	7½ @	7½ @
Traps, S 4" .....each	1 90 @		1 90 @	1 90 @
" S 2" " "	1 10 @		1 10 @	1 10 @
" ½ S 4" " "	1 55 @		1 55 @	1 55 @
Bath Tubs: (Tinned and Planished.)				
Copper, 16 oz. 6 ft. 30%	19 75 @		19 75 @ 25 %	@ 19 75
" 14 oz. " 30%	17 75 @		17 85 @ 25 %	@ 17 75
Bath Boilers: (100 lbs. pressure.)				
Copper, 16 oz., 40 gals. 30%	28 00 @		24 00 @ 20 %	@ 34 00
" 14 " 40 " 30%	32 00 @		24 00 @ 55 %	@ 32 00
Galvanized-iron, 40 gals. 55%	24 00 @		24 00 @ 55 %	@ 24 00
Solder:		16 @ 17	13 00 @ 15 %	
Iron:				
I-Beams up to 12"	@ 4	@	@ 4	
I-Beams above 12"	@ 4	@ 4	@ 4	
Channel-Beams up to 12"	@ 4 2-10	@	@	30 3½

Heating and Ventilation.

GLOBE VENTILATORS & CHIMNEY CAPS.

Public and Private Buildings and Railroad Cars Perfectly Ventilated.

SMOKY CHIMNEYS CURED!

STATIONARY, ORNAMENTAL, NOISELESS, STORM-PROOF, DURABLE, SIMPLE, and CHEAP.

Send for Price-List. Working Model sent on receipt of 20 cents, to pay postage. Manufactured and for sale by

GLOBE VENTILATOR CO.

Office: 203 River Street, Troy, N. Y.

Wholesale Agents for Albany and vicinity, Hoy & Co., Nos. 25 and 27 Green St., Albany, N.Y.
Wholesale Agents for New York City and vicinity, George H. Morgan, 26 Cliff St., New York City.
Wholesale Agents for Philadelphia, Pa., and vicinity, Merchant & Co., 232 Arch St., Phila.
Wholesale Agents for Nebraska, Idaho, Montana, and Wyoming, Milton Rogers & Son, Omaha, Neb.
Wholesale Agents for Milwaukee & Vicinity, Rundle, Spence & Co., 89 West Water St., Milwaukee, Wis.
Wholesale Agents for Boston, Mass., and vicinity, Chas. M. Bromwich, 613 Broadway, South Boston.
Wholesale Agents for Chicago, Ill., Sargent, Greenleaf & Brooks, 43 and 45 Franklin St.
Wholesale Agents for Louisville, Ky., George L. Smith, 167 First St., Louisville, Ky.
Wholesale Agents for Canada, Hughes & Stephenson, 745 Craig St., Montreal, Can.
Wholesale Agents for St. Louis and vicinity, N. O. Nelson & Co., Eighth and St. Charles Sts.
Wholesale Agents for Ogden, Utah, and vicinity, D. D. Jones, Main St., Ogden, Utah.
Wholesale Agents for Rochester and vicinity, Trotter, Geddes & Co., 29 Exchange and 10 Aqueduct Sts., Rochester, N. Y.
Wholesale Agents for Minnesota, Wilson & Rogers, 24 East Third St., St. Paul, Minn. Wholesale Agents for Cincinnati and vicinity, H. McCollum & Co., 262 Race St., Cincinnati, O.
Wholesale Agents for Baltimore, Md., Lyon, Conklin & Co., 27 and 29 Light Street, Baltimore, Md.
Wholesale Agents for Detroit, Mich., and vicinity, Dry-Dock Sheet-Metal Works, cor. Orleans and Franklin Sts., Detroit, Mich.

DETROIT STEAM RADIATOR CO.'S Patent Cast Iron Steam Radiator.

This radiator is constructed upon the principle *of a coil*. A diaphragm separates one leg of the loop from the other, so that steam entering passes up one leg to the top of the loop, down the other leg to the opposite side of the diaphragm, thence into the next loop, and so on through the Radiator, securing a Perfect Circulation and an Immediate heating of the whole Radiator. It is adapted to **High** or **Low** pressure, and surpasses all others in the perfection of its operation, beauty of design, and simplicity of construction. The loops or sections are made complete and independent of each other, and each loop is screwed to the adjacent loop by a double-thick wrought-iron nipple, thus forming a perfect joint not affected by contraction or expansion.

No packing is used, and there are but **two joints** in each four feet of heating surface (36-inch size), while the ordinary pipe radiator has **eight joints.** It has the largest radiating surface of any in the market to space occupied.

As each loop or section is an exact duplicate of the other, **the size of a radiator may be increased or diminished** if desired, and in case of damage by frost or otherwise, it can be easily repaired without removal from the building. This is true of no other Radiator and is very important. Being constructed without the cumbersome base so objectionable in all other radiators, there is no accumulation of dirt and dust, and the most perfect radiation is secured.

Liberal discount to the trade. Send for catalogue and price list. Address,

DETROIT STEAM RADIATOR CO., Office, 129 Griswold St., Detroit, Mich.

SHIELDS & BROWN,

—FOR— BOILERS AND STEAM PIPES. Prevents Condensation of STEAM.

MANUFACTURERS AND SOLE PROPRIETORS OF

Made of Wool Felting, Lined with Asbestos Lining Felt. Best Non-Conductor of Heat and Cold in the World.

Send for Descriptive Circular and name this Paper.

—FOR— GAS AND WATER PIPES. Prevents Sweating and Freezing.

10

"MORTON'S METAL"

(Registered Trade-mark, May 1st, 1883.)

Cable and Champion Sash-Chains

and Patented Attachments.

The most **RELIABLE** and **CHEAPEST** article in the market for suspending

Window-Sashes.

HAS GREAT TENSILE STRENGTH,

Can be easily applied to any window, and gives SATISFACTION wherever used. Samples sent to any Architect free on application. Now in use in all the leading cities throughout the United States.

MANUFACTURED ONLY BY

THOMAS MORTON,

65 ELIZABETH ST., NEW YORK.

For a Sash of 250 Lbs.

1

PEERLESS PRESSURE RECORDING GAUGES

Make a chart of all pressures showing variations and time of occurrence.

S. P. JONES, 28 School Street, - - - - BOSTON, MASS.

Skylights and Ventilation.

THE BROOKLYN METALLIC SKYLIGHT WORKS.

JOHN SETON, 78 and 80 Washington Ave., BROOKLYN, N. Y.

Send for new illustrated catalogue and price-list.

BICKELHOUPT'S METALLIC SKYLIGHTS.

NO INFRINGEMENT on any other.

Are the Cheapest and Best.

Manufactured Solely by

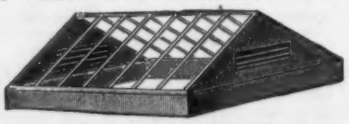
BICKELHOUPT BROTHERS,

218 West 37th Street, New York.

Send for Illustrated Catalogue.

Skylights.

E. VAN NOORDEN & CO,



389 Harrison Ave., Boston,

Manufacturer of

METALLIC SKYLIGHTS,

Van Noorden's Patent Ventilator,

GALVANIZED IRON CORNICES,

CORRUGATED IRON ROOFING AND SIDING,

Light Iron Buildings, with Wrought-Iron Frames and Corrugated-Iron Coverings, **Suitable for Sheds, Storehouses, Boiler Rooms, etc.**

Send for Circulars and Price Lists.

SKYLIGHT LITIGATION.

Notice to Owners of Buildings and Others.

I hereby caution all persons against purchasing and using my patented inventions in skylights, as the patents thereon have been held by the U. S. Court to be good and valid in law, and that I was the original, first and sole inventor and not anticipated, (see Official Gazette, Vol. XXII, page 1710).

My patents cover Ventilating Ridge, or Ridge Ventilator, inside Base gutters, Hollow Bars with gutters, cross gutters under all joints and all combinations of the same, so important to prevent leakage, and all of which features are essential to a perfect, permanent and thoroughly effective skylight.

The *Maker*, the *Seller* and the *User* of my inventions are equal infringers, and where the maker lacks responsibility, I shall hold the user. (*Vide* U. S. Revised Statues, Sec. 4884 and 4919).

Every Skylight furnished by myself or licensees will bear my label. Only those authorized by me use my name.

Every effort is being made to bring my suits to final issue, and no pains or expense is spared to that end, which will soon be reached.

No honest man knowing the situation, would buy or use the barefaced counterfeits that are in the market, under temporary protection afforded through tardiness of the courts and bare technicalities, especially when the difference in cost is but little, if any, more than the genuine, the quality and construction which are so well known.

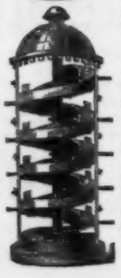
GEO. HAYES, Inventor and Patentee,
71 Eighth Ave. New York.

Pardessus' Exhaust Ventilating Sky-Lights

DOME, HIPPED, And usual styles, METAL OR WOOD FRAMES.

DOME EXHAUST VENTILATOR CAP.

Natural Heat only relied upon, no foul Air, no Smoky Chimney with these caps in use. Cheap and most effective.



DOUBLE PASSAGE, QUICK FIRE REACH, AND PRACTICAL FIRE-ESCAPE.

Absolute safety to occupants of lofty buildings, in rescuing Invalids, the feeble and timid, as well as the able, without harm.

No danger from smoke, flame, ice, freezing or exposure.

A Descriptive Illustrated Pamphlet of each of the above sent at request.

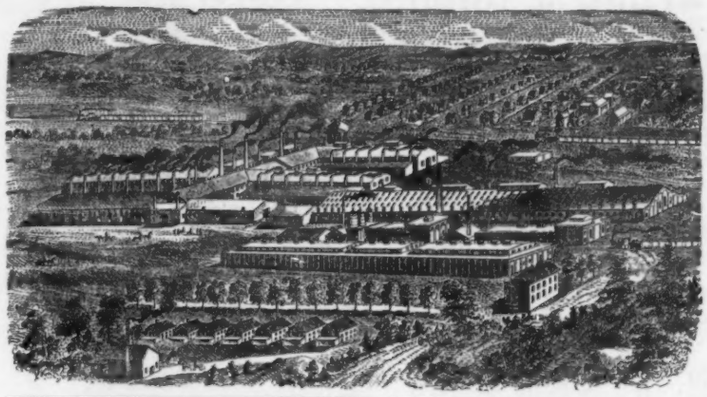
S. J. Pardessus, Patentee

Office, 9 and 11 Park Place, NEW YORK.

CRYSTAL PLATE-GLASS COMPANY

(CAPITAL, $1,500,000.)

OF ST. LOUIS, MO.



Manufacturers of

Polished Plate-Glass,

Skylight-Glass, and

Flooring-Glass.

FACTORIES:

CRYSTAL CITY, MO.

OFFICE:

ST. LOUIS, MO.

Estimates Promptly Furnished.

Architects' Supplies.

E. G. SOLTMANN,

DRAWING MATERIALS.

BLUE-PROCESS PAPERS.

Tracings copied by Soltmann's "White-Print Process (Blue Lines on a White Ground.)
Tracings copied by the "BLUE-PROCESS."
Gen'l Ag't for "UNION" Liquid Drawing Inks.
Send stamp for samples and prices of drawing and "Blue-Process Papers."
119 Fulton Street, NEW YORK.

WATER COLORS

G. Wagner's Celebrated Specialty, for Architects and Designers. Send for Price-List to
J. MARSCHING & CO., 27 Park Place, N. Y.

MY 88-PAGE ILLUSTRATED

CATALOGUE of BOOKS

On Architecture, Building, Carpentry, Drawing, Painting, Decoration and Ornament,
Drawing Instruments, Builders' Level and Architects' Materials,
Sent on receipt of three three-cent stamps.
WM. T. COMSTOCK, 6 Astor Place, New York.

ESTERBROOK'S STEEL PENS

FOR SALE BY ALL STATIONERS.
THE ESTERBROOK STEEL PEN CO.
20 John Street, New York, N. Y.

T. WILLIAM HARRIS,

Civil Engineer and Surveyor.

Attention given to any engineering or surveying work. **Special Attention** given to any work required by Architects, such as staking out lots, setting batters for buildings, giving lines and grades for buildings, streets, drives, and drains. Excavation and filling measured.
No. 63 Court Street, Room A,
Cor. Cornhill & Court Sts.

ALBERT LEVY'S Ferro-Prussiate Paper.

(BLUE-PROCESS.)

It is the only paper that keeps any length of time before and after using. Superior quality of paper. **Try it.**
One roll 30 inches wide, 11 yards long, **$2.50.** One roll 39 inches wide, 11 yards long, **$3.25.**
Agents in Boston, Chicago, San Francisco, etc.

BLACK-LINE PAPER, giving Black Lines on White background.

Albert Levy's Architectural Photographic Series.

Catalogues and Circulars on application.

No. 4 BOND STREET, NEW YORK.

ROSENBERG'S

ARCHITECTURAL FINISH, AND OIL SHELLAC.

For Sale in Boston by WADSWORTH, HOWLAND & CO.
STANDARD VARNISH WORKS, D. ROSENBERG & SONS, Man'f's., 734-740 E 14th St., N. Y.

"Giant Metal Sash Chain."

MADE ONLY BY

THE SMITH & EGGE MANUFACTURING CO.,

BRIDGEPORT, CONN.

The most reliable and economical article in the market for the purpose. GREAT TENSILE STRENGTH Does not corrode; does not lose its vitality by continuous use, or exposure to the elements; runs over any pulley, and gives satisfaction wherever it is used. Fixtures made of steel wire, is very simple and easily applied. Prices very low. Samples sent to any architect in the United States, free, on application. Now in use in State House, Hartford; Providence City Hall; Singer Building, Chicago; J. C. Flood's, Menlo Park, Cal.; Vancornlear and Florence Flats, New York; Boreel Building, New York; new State War and Navy Departments, and Patent Office, Washington, D. C.; *Herald* Building, Boston, and very many other fine buildings in all parts of the United States.

Complete Sets of the *American Architect.*

We have, and shall have, only a very few complete sets of volumes of the *American Architect* already published. Those who desire to obtain a perfect set should lose no time in applying to the publishers,
JAMES R. OSGOOD & COMPANY, 211 TREMONT STREET, BOSTON.

VULCANIZED RUBBER FABRICS

Of Every Description.

Rubber Belting, Packing and Hose,

ALSO

RUBBER MATS & MATTING

For Halls, Floors, Stone and Iron Stairways, etc.

FIRE-TEST HOSE FOR BUILDINGS.

Address the Manufacturers,

NEW YORK BELTING & PACKING CO.,

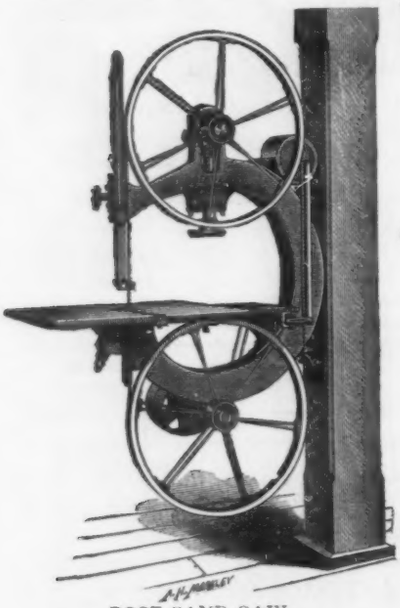
Warehouse, 15 Park Row, New York.

JOHN H. CHEEVER, Treas. **J. D. CHEEVER, Dept. Treas.**

CORNICE CONTRACTORS.

500 to 1000 ft. Galvanized-Iron Cornices formed a day with our Automatic and Hand-forming Brake. Being also self-opening and closing, it is the most economical, labor-saving, and best brake in the world. *Send for Circulars.* Exchanged second-hand machines always on hand.

CALVIN CARR CORNICE MACHINE CO., Newark, N. J.



POST BAND-SAW.

Wood-Working Machinery.

FOR

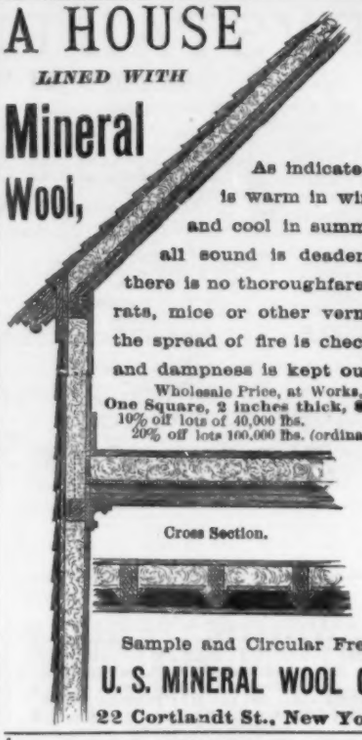
CAR BUILDERS,
PLANING MILLS,
RAILROAD SHOPS,
CABINET, CARRIAGE,
SASH, DOOR, and
BLIND MAKERS.

SEND FOR CIRCULARS.

GOODELL & WATERS,

Thirty-First and Chestnut Sts.,
PHILADELPHIA, PA.

A HOUSE *LINED WITH* Mineral Wool,



Cross Section.

As indicated, is warm in winter and cool in summer; all sound is deadened; there is no thoroughfare for rats, mice or other vermin; the spread of fire is checked and dampness is kept out.

Wholesale Price, at Works,
One Square, 2 inches thick, $4.00.
10% off lots of 40,000 lbs.
20% off lots 100,000 lbs. (ordinary).

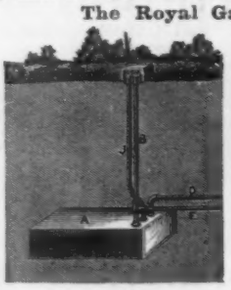
Sample and Circular Free.

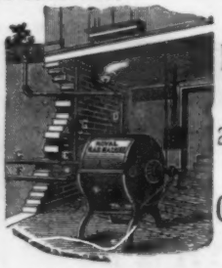
U. S. MINERAL WOOL CO.,
22 Cortlandt St., New York.

The Improved Royal Gas-Machine,

Manufactured by Pennsylvania Globe Gas-Light Company,
Nos. 617 and 619 ARCH STREET, PHILADELPHIA, PA.
The Royal Gas-Machine.

THE BEST, MOST DURABLE,





Economical and Reliable Gas-Machine.

For lighting Country and Suburban Residences,
CHURCHES, OPERA-HOUSES,
Seminaries, Stores, Asylums, Hotels, Mills, Factories, etc.
All information furnished on application.

The Combination Gas-Machine Co.

DETROIT, MICH., and WINDSOR, ONT.,
MANUFACTURE

Gas-Machines

—FOR—

Lighting Churches, Hotels, Residences, Stores,
Or any place wanting artificial light.

The Oldest and Best Machine in use. Over 4,000 Machines in successful operation. Send for Illustrated Catalogue.

HELIOTYPE.

PERMANENT PHOTOGRAPHIC BOOK ILLUSTRATIONS.

Special attention paid to the Reproduction of Architects', Engineers' and Surveyors' Drawings.

THE HELIOTYPE PRINTING COMPANY

ARE PRODUCERS OF BOOK ILLUSTRATIONS AND REPRODUCTIONS BY THE HELIOTYPE PHOTO-LITHOGRAPHIC AND PHOTO-ENGRAVING PROCESSES.

Employed by the U. S. Government in illustrating Scientific and Medical Reports; by Scientific, Historical and other learned Societies; by the leading Publishers, and for illustrating Town and Family Histories, etc. Facsimiles of Medals and Coins, Ancient MSS., Paintings, Drawings, and Sketches, Views and Portraits from Nature, Medical and Scientific Objects, Antiquities, etc., etc. For terms and specimens apply to the

Heliotype Printing Company, 211 Tremont Street, Boston, Mass.

United States Mutual ACCIDENT Association, 320 Broadway, N. Y.

To Architects and Builders. Save one-half the usual cost of Accident Insurance by insuring in the **United States Mutual Accident Association,** 320 and 322 Broadway, New York. The oldest, largest, strongest and surest Mutual Accident Association in the World. Insures against accidents at half the rates of stock companies. Architects or Draughtsmen, having office duties only, can receive $10,000 insurance with $50 weekly indemnity at a cost of about $25 per annum, or half that amount of insurance at corresponding rates. Architects or Master Builders, supervising only, may receive $4,000 insurance with $20 weekly indemnity. Annual cost, $12.

How to become a member:—Write for Circular and Application-Blank, and when received fill out your application, enclose $5 and forward it to the Secretary at New York, on receipt of which a policy will be promptly mailed to you.

TIRRILL'S EQUALIZING GAS MACHINE.

Makes Standard, Uniform Gas, wirhout Fire, Danger, Smoke or Smell, using plain Bat-wing Burners.

The only Machine in the world that can reliably do it. Send for circulars, and see who endorses this statement.

TIRRILL GAS MACHINE CO.
39 Dey St., N. Y.

IMPERIAL GAS MACHINE.

DENNY BROS. & CO.
50 Barclay St., New York.

In use throughout the world. Send for descriptive pamphlet.

The Great Church LIGHT.

FRINK'S Patent Reflectors give the Most Powerful, the Softest, Cheapest and the Best Light known for Churches, Stores, Show Windows, Parlors, Banks, Offices, Picture Galleries, Theatres, Depots, etc. New and elegant designs. Send size of room. Get circular and estimate. A liberal discount to churches and the trade.

I. P. FRINK, 451 Pearl St., N.Y.

Furniture and Interior Work.

Ostrander's New Oral Annunciator.

Superior in every respect. No Batteries or Wires.

Hotels, Apartment-Houses, Residences, Offices, Factories, etc. fitted in any part of the Country. Complete Outfits of Speaking-Tubes, Whistles, Pneumatic-Bells, etc., furnished. Send for New Catalogue. Estimates furnished.

W. R. OSTRANDER & CO.,
21 and 23 Ann St., New York.

TOMLINSON & CARSLEY,

Designers and Manufacturers of

Fine Interior Finish and Furniture.

For Private Residences or Public Buildings. Estimates given on all kinds of Wood-work.

L. F. CROSBY, Designer, 55 Central Music Hall.

FACTORY, 2242 to 2256 . . . Arnold St., Chicago, Ill.

The E. D. ALBRO CO.,

Direct Importers of

MAHOGANY,

(Via. New Orleans.)

Manufactured to sizes specially adapted to

BUILDERS.

Manufacturers of

Veneers and Hard-Wood Lumber,

Domestic and Foreign.

Mills, 685-711 West Sixth Street,

CINCINNATI, O.

Estimates and Price-List furnished.

OFFICE, 276 DEVONSHIRE STREET.
Sold by Hardware Dealers.

SETTEES AND OPERA CHAIRS.

The Newest & Best Styles for SUNDAY SCHOOLS, CHURCHES, OPERA-HOUSES, LODGEROOMS, HALLS, OFFICES, &c.

Harwood Chair Seat Co.,
24 Washington St., Boston.

Send for catalogue and state requirements.

WESTERN ELECTRIC CO.,

Chicago, Boston, New York.

Electric Call-Bells and Annunciators,

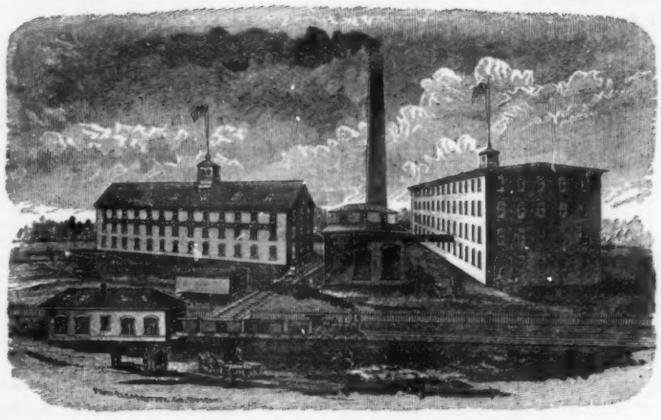
For Hotels, Residences, Offices, etc. Electric Burglar-Alarms, Electro-Mercurial Fire-Alarms. Electric Gas-lighting Apparatus. Telegraph Instruments and Supplies.

IMPROVED SEATING,

For Schools, Churches, *Halls &* OPERA-HOUSES.

Send for Catalogue showing 20 Best Styles manufactured by

BAKER, PRATT & CO.,
19 Bond St., New York. 518 Arch St., Phila.



Leather Substitute.

THE ATTENTION OF

Architects, Decorators and Furnishers,

Is called to the new improved substitute for leather. Resembling as it does the real article in appearance and durability, it is fully guaranteed to give perfect satisfaction for covering chairs or seats for

Opera or Club Houses, Private or Public Dining or Billiard Rooms,

And the seats and backs of Church Pews,

and in fact to take the place of real leather in all cases. For decorative purposes it is used for Lambrequins, Panels, Screens, &c., &c. It is made in all colors and in seal and alligator grain, also embossed in a variety of designs.

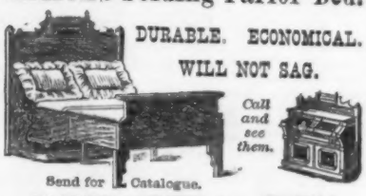
Send for Samples, stating for what purpose it is wanted.

THE EVANS ARTIFICIAL LEATHER CO.,

92 PEARL STREET, BOSTON, MASS.,

Walter N. Dole, - - - - Gen'l Agent.

Andrews Folding Parlor Bed.



DURABLE. ECONOMICAL.
WILL NOT SAG.

Call and see them.

Send for Catalogue.

KEELER & CO.

EASTERN AGENTS,

83 to 91 Washington St., Boston, Mass.

ARCHITECTS

and owners of new buildings should send for descriptive circular of this screen.

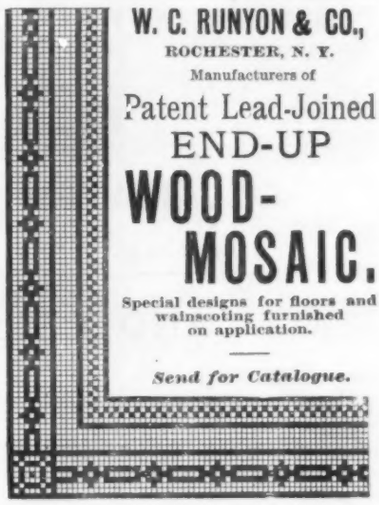
10,000 made in 2 seasons.

AMERICAN SCREEN CO.,
Brookline, Mass.

A. H ANDREWS & CO.

195 Wabash Avenue,
CHICAGO,

Make as a specialty and acknowledge no superior in their artistic Wood-Mantels and Hard-wood fittings for Banks, Offices, Schools and Churches.



W. C. RUNYON & CO.,

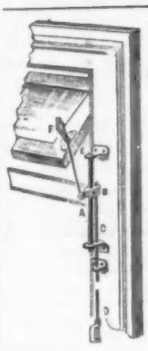
ROCHESTER, N. Y.

Manufacturers of

Patent Lead-Joined
END-UP
WOOD-MOSAIC.

Special designs for floors and wainscoting furnished on application.

Send for Catalogue.



THE REIHER IMPROVED
Self-Locking Transom Lifter,

answers equally well for all transoms.

Hinged at the top.
Hinged at the bottom.
Hinged at the centre.

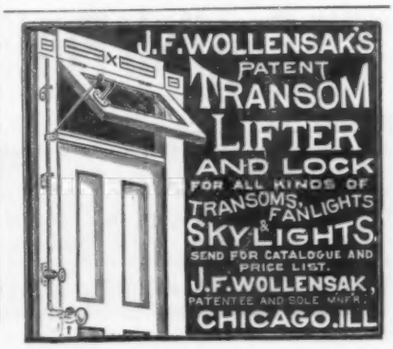
Exclusively manufactured by

F. A. REIHER & CO.
11 and 13 S. Canal Street,
CHICAGO, ILL.

Send for Catalogue.

Cut showing the parts belonging to the transom lifter.

A. The locking-bar.
B. The self locking adjusting block.
C. The operating rod.
D. The lower bracket.
E. The lifting arm.
F. The transverse bracket.



ESTABLISHED 1836.

JOHN FARQUHAR'S SONS,

SLATE, METAL, AND COMPOSITION ROOFERS.

Nos. 20 and 22 EAST STREET, BOSTON.

Order Box, No. 83 Mechanics Exchange, No. 35 Hawley St.

Agents for Warren's Patent Natural Asphalt Roofing. Special attention given to repairs of all kinds of Roofing.

Inventors and Owners of the following Patents: *First*, Patent Fastener for securing Slates or other covering to Iron Purlines where the roof is wholly of iron. *Second*, A Roof composed of Wooden Rafters encased in Asbestos, Sheet Metal, or other fire-proof material, to which Iron Purlines are fastened, and the slates or other coverings secured by our Patent Fastener. The slates are then rendered underside with hair mortar or any other material. The object intended being a Light Fire-proof Roof, avoiding all condensation and preventing leakage.

THE

NEUCHATEL ASPHALTE CO.,

Sole Proprietors of the

Val de Travers Rock Asphalte Mines,

Canton de Neuchatel, Switzerland.

Val de Travers Rock Asphalte,

For Floors, Sidewalks, Roofs, &c.,

Durable, Fireproof, and Impervious.

For estimates and full particulars apply to office, No. 54 Astor House, New York.

HENRY R BRADBURY, Manager.

EDWIN A. JACKSON & BRO.,

77 Beekman Street, NEW YORK.

Heat-Saving and Ventilating

GRATE.

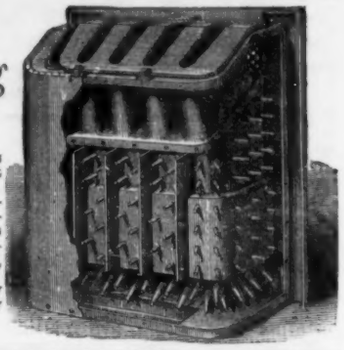
WASHINGTON, D. C., March 29, 1883.

Gentlemen :—I take pleasure in saying that the three ventilating grates of your make, which I have had in use the past winter, have given perfect satisfaction.

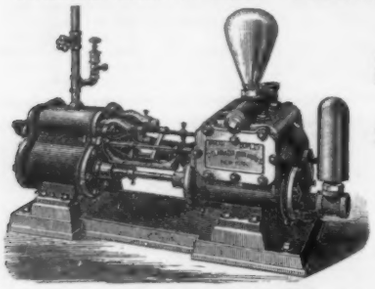
They have fully met your recommendation and come up to my expectations. They keep the rooms in which I use them, supplied with a full supply of fresh air, creating a complete ventilation. This air being heated as it passes through the air chamber, pours into the room through the perforations at the top of the grate, bringing a supply of heat which, I think, more than doubles the radiating power of the fire itself.

The one whose operation I have observed personally most closely is in my study, a room about 18 x 28 ft. in dimensions, which it keeps thoroughly warm and well ventilated.

Yours truly, STANLEY MATTHEWS.



DELAMATER DUPLEX STEAM-PUMPS.



The most approved

STEAM PUMPS

Now on the United States' market for

Hydraulic Elevators,

House Tank Service,

Railway Water Stations, etc.

Water-Works Pumping Engines.

SEND FOR CATALOGUE.

DELAMATER IRON WORKS.,

40 Dearborn St., CHICAGO.

16 CORTLANDT ST., New York.

Works, foot W. 13th St.,

Jenkins's Patent Valves

Are the acknowledged standard of the world. Have been in use since 1868, under all possible conditions, and never have failed.

Send for New Valve List.

To avoid imposition see that valves are stamped, "Jenkins Bros."

JENKINS BROS.,

71 John St., N. Y. 79 Kilby St., Boston.

The New Indestructible and Imperishable

WALL AND CEILING DECORATION

IN SOLID RELIEF.

Lincrusta Walton

"I have carefully examined the material called 'Linerusta-Walton,' and consider it one of the most valuable materials for architectural and decorative purposes which has ever been invented I cannot say too much in recommendation of it."

JAMES RENWICK, Architect.

"I consider 'Linerusta-Walton' in certain respects the most valuable and useful material for wall decoration. It allows of the richest and most intricate designs being produced in solid relief. Its many advantages, not the least of which is its comparative cheapness, should recommend it to all interested in interior decoration."

RICHARD M. HUNT, Architect.

"I learn with satisfaction the invention of a cheap, durable and attractive material, which can be used to exclude moisture and prevent saturation of walls, ceilings, &c. From my examination of 'Linerusta-Walton,' including chemical tests, as to its power of resisting moisture, I am satisfied of its practical utility in its sanitary applications. Its decorative possibilities are also another advantage."

Send for descriptive pamphlet. CHARLES F. WINGATE, Consulting Sanitary Engineer.

FR. BECK & CO., Sole Agents for the United States.

New York.

THE BEST

BUILDING PAPER.

Sackett's Water-proof Sheathing.

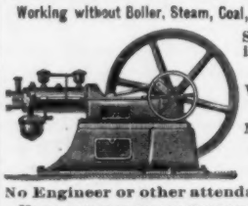
Strong, clean to handle, inexpensive, impervious to moisture, water and gases. Send for samples.

NEW YORK COAL TAR CHEMICAL CO.

10 Warren Street, NEW YORK.

NEW OTTO SILENT GAS-ENGINE.

Working without Boiler, Steam, Coal, Ashes, or Attendance.



Started by a Match it gives full power immediately.

When stopped all expense ceases.

No Explosions. No Fires or Cinders. No Gauges. No Pumps.

No Engineer or other attendant while running.

UNSURPASSED IN EVERY RESPECT for running elevators in Stores or Warehouses, pumping for hydraulic elevators, or domestic purposes, etc., etc. 1, 2, 3, 4, 7, 10, and 15 H. P. and upwards. Built by

SCHLEICHER, SCHUMM & CO.,

W cor. 33d & Walnut Sts., Philadelphia.

ARCHER & PANCOAST M'F'G CO.

No. 67 Greene Street, { NEW YORK: } 68 to 72 Wooster Street,

FINE GAS FIXTURES.

Special attention given to Architects' Designs, and to the furnishing of Private Residences, Churches, and Public Buildings with GAS FIXTURES adapted in style and finish to the architecture and interior decoration.

Boston Branch: 12 West St., cor. Washington. W. L. IRELAND, Manager.

American Fire Insurance Co., Phila.

CASH CAPITAL	400,000.00
Reserve and Liabilities	852,970.05
Surplus	551,548.96
Total Assets Jan. 1, 1884	1,804,519.21

HOWARD FLEMING,

AGENT FOR

ROMAN CEMENT. English Portland Cement, KEENE'S CEMENT.

I supply U. S. Engineers, and the 15,000 bbls. of Portland Cement for Washington Monument.

SEND FOR CIRCULAR ON TESTS. NEW YORK OFFICE, 23 LIBERTY STREET.

ABSOLUTELY SAFE FROM DESTRUCTIVE EXPLOSION

BOILERS

DURABLE ECONOMICAL DRY STEAM MERITS PROVEN 18 YEARS RECORD

BOILERS READILY ENLARGED STATIONARY OR PORTABLE. IMMEDIATE DELIVERY.

CORRESPONDENCE SOLICITED. HARRISON SAFETY BOILER WORKS. PHILADELPHIA, PENNA.

GENERAL AGENTS GRAYDON & DENTON N.Y.C.O. 115 PARK PLACE, NEW YORK.

SPECIFICATIONS SHOULD INCLUDE

Folsom's Patent Roof Snow-Guards.

Address, —— 200,000 IN USE. ——

JOHN H. HILLER, 1410 Tremont St., Boston.

The American Architect and Building News

ADVERTISERS' TRADE SUPPLEMENT.

No. 25. SATURDAY, JULY 5, 1884. Volume XVI. No. 445.

JOHN WILLIAMSON.

We regret to learn of the death of Mr. John Williamson, an artist of no mean pretension in his especial field, and one with whose handiwork the profession was becoming acquainted through the artistic metal-work manufactured by one of the growing art-industries of the South — the Williamson Art Metal Works, of Louisville, Ky., of which he was the guiding spirit. Eighteen years ago Mr. Williamson left Scotland to settle in this country, where his well-developed mind and hand found ready employment in one art-industry or another, until a number of gentlemen who believed in him, and perceived the advantages opened by the present art-movement in this country, formed a stock company for the production of artistic metal-work, and put him at the head of it. We trust that this, one of the pioneer enterprises of its class in the South, is so firmly established that the loss it laments may prove only a temporary embarrassment.

More than artist and manufacturer, did Mr. Williamson consider himself a botanist, and his claims to distinction in this direction are well recognized. His special field of study was the cryptogamous plants, and here his skill as draughtsman was of excellent profit to him, for he published some years ago two successful botanical works, illustrated by himself, the "*Ferns of Kentuckey*" and "*Fern Etchings.*"

Architects who have used any of his metal-work in the past, or who may in the future be so happy as to secure some from the designs already prepared by him, may rest assured of the perfect accuracy of the botanical subjects.

Office of the Williamson Art Metal Works,
Louisville, Ky., June 19, 1884.

Works ordered closed until Monday, 23d inst.

Resolved, That it is with feelings of the most profound regret we have heard to-day of the death of our esteemed friend and business associate, John Williamson, who died on the 17th inst., at Alderson, W. Va.

Resolved, That in our opinion no man was more fully imbued with the principles of integrity and truth than our departed friend, whose life was as earnest as were his actions unselfish.

Resolved, That we recognize in his great capacity, untiring energy and perfect fidelity, qualities to be admired, and which gave assurance that at no distant day he would enjoy even a greater reputation and still broader recognition in the world of science and art.

Resolved, That in the death of John Williamson, Louisville has lost a man whose memory she may well cherish with pride: science has been deprived of the services of a faithful and honest laborer; his aged mother, to whom we offer words of sympathy and condolence, has had snatched from her a devoted, self-sacrificing son; art, at whose shrine he was a zealous devotee, has lost from her followers a most valuable contributor, whose soul was full of poetic sentiment, and whose hands wrought things of grace and beauty.

Jos. W. Sprague, *President.*
Geo. H. Moore, *Treasurer.*
R. J. Menefee, *Secretary.*

PORTLAND CEMENT.

Probably no article among masons' and builders' materials has made such rapid strides towards enforcing a proper recognition of its merits, the economy of its use and the manifold uses to which it may be successfully applied, as Portland cement. It has had much to contend against in its struggle for the high position it has attained among the building materials in this country, largely due to an utter lack of knowledge as to its merits and properties, and how to use it, together with the mistaken idea that, because its cost exceeded that of our native cements, it must therefore be a more expensive or rather a fancy material to use in the construction of building or engineering works.

Even at this day there is a very limited practical knowledge of the use of Portland cement to be found among both professional men and mechanics, whose education and business should make such knowledge a necessity.

As Portland cement is principally used where the necessity is felt of having the best material obtainable, the quality of the particular cement to be used is in itself a question of vital importance, and to that end any reliable information showing, upon good authority, the comparative value for practical work of the several brands of Portland cements in this market cannot but be of service to those interested; such information, together with instruction for the use of Portland cement, and remarks as to some of its peculiar features, has been published in pamphlet form, for free distribution to those using cement, by Messrs. O. F. Alsen & Son, Germany, the largest exporters of Portland cement to this country, and may be obtained by applying to their selling agents in this country,

SINCLAIR & BABSON,
105 John St., New York.

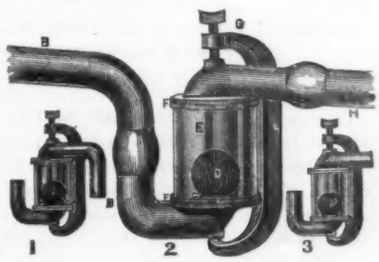
THE BENNOR TRAPS.

In view of the growing sentiment against trap-ventilation, as evidenced in an article on "Sanitary Plumbing," in the *American Architect* of May 17, we call attention to a line of sanitary goods patented by Jos. Bennor, and manufactured by Cooper, Jones & Cadbury, of Philadelphia.

In a catalogue of these goods issued in December last, it may be found that practically the same arguments are used against trap-ventilation as in the article referred to, and the alternative suggested is the use of the appliances set forth in their circular.

We have only space to illustrate the Bennor Traps, the principle of their working being simply the utilizing of the natural siphonage force or flush as a cleansing property, while presenting a double barrier against the return of sewer-gas. To get the full benefit of this flush they require that the pipes leading to and from the trap shall be of the same size and as near the size of the outlet fixture as possible.

These traps certainly demand general consideration, as they have not only been highly endorsed by many prominent architects throughout the country, but the inventor is the recipient of the "Scott Premium and Medal" from the Franklin Institute, of Philadelphia, for the best sewer-trap yet brought to its notice, while the simplicity of their construction and comparative cheapness are greatly in their favor for general use. We quote from their circular: —



Full S. Running. Half S.

"Particular attention is called to construction of valve. It is a glass ball enclosed in an elastic composition. The latter is the result of careful experiment, and will remain perfect indefinitely, even when subjected to the action of hot water and greasy discharge of a kitchen sink."

The following are some of the claims made for this trap: —

1. It is a perfect seal, with or without water.

2. It is a sure trap against back-water pressure.

3. It affords no lodgement for dirt. Anything that can pass through the pipes is forced through the trap with great velocity by its siphonage force. This keeps trap and adjoining pipes free of coating. In a word, it is an automatic cleaner, and will be found as clean after a year's use under a kitchen sink as when first put up.

4. It is impossible to break the water-seal. Two to three inches of water are always retained, no matter how great may be the siphon-force.

5. Compact and light. Inch trap, with glass, weighs 2 lbs. 8 oz.; with metal, 2 lbs. 12 oz.

6. Universal in its application; can be

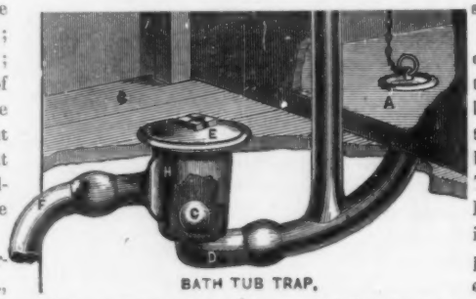
adjusted to suit pipes; may be placed close to basin, as in cut, or any distance from it, with same result.

7. Simple, cheap, durable, and easily taken apart.

The difference between the Bennor "Globe" and Siphon-Trap is in construction; the working principle is the same. Its advantages are the round chamber, with coupling on bottom making it universal, and the side cap giving free admission to all parts of the interior. These are all of brass, and made with or without ventilating pipe.

"Bennor Globe" Trap.

The bath-tub trap is on the same principle as the others; is a perfect seal against sewer-gas and backwater; made entirely of brass; sets level with floor; and in the event of fouling can be cleansed without trouble and without disturbing the wood-work around the bath-tub.



BATH TUB TRAP.

They have water-closets, basins, etc., embodying the same principle as traps, which, they claim, mark a new departure in sanitary plumbing.

The sole manufacturers for the United States are

MESSRS. COOPER, JONES & CADBURY,
1136 Ridge Ave., Philadelphia, Pa.

ASBESTOS PAINTS.

The H. W. Johns Manufacturing Co., 87 Maiden Lane, New York, have issued in very attractive form, an illustrated pamphlet bearing the title "Structural Decoration," which is devoted to advocating the more liberal use of colors in the decoration of cottages, villas, etc., and particularly to the advocacy of the merits of the well-known Asbestos Liquid Paints of their manufacture. These paints are now so well known, by reason of their very extensive introduction in all parts of the country, that it will be telling an old story to make more than a passing allusion to their merits.

The pamphlet, besides describing the nature and quality of the asbestos paints, gives a number of well-executed engravings of prominent public buildings, hotels, railway companies and structures, which have the paints in use. In the extensive list of these, we notice the Capitol at Washington, the Metropolitan Elevated Railroad of New York, and many of the leading railway companies, and summer resort hotels.

Mr. Johns has the honor of being the pioneer in this country of the asbestos industry, and to his numerous improvements in the processes for utilizing this product, and his energy and business skill, the building up of the asbestos industry to its present large proportions, is very largely due.

We see no reason why the words of encouragement which the *Northwestern Lumberman* addresses to its subscribers should not have application to the pursuits of all who are engaged in dealing in building materials, and supplies of all kinds.

"One of the most encouraging signs of the times to the handlers of lumber is the prevailing house-building inclination. There seems to be a kind of house-building passion that has possessed the minds of the people. This has materialized in the form of building-associations. It is a poor little town indeed, these days, that does not have one or more building-associations. People who earn their living by sweat of brow or rack of brain have come to think that there is no other so safe a place to keep money as to have it nailed or mortared into solid walls, and covered by reliable insurance. Building-associations enable men of moderate income to save a little money each month, which not only earns interest and dividends, but helps to provide money for building homes. More men now than ever before are toiling under the inspiration that these savings give them. Out of the scheme thousands of dwellings and business houses are constantly rising all over this country and the Canadas. If there is no abatement of the impulse — and it is to be hoped there will not be — the building industry cannot but continue prosperous, and the use of lumber and all building material will increase."

The American Architect and Building News.

PUBLISHED EVERY SATURDAY BY

JAMES R. OSGOOD & COMPANY,

211 Tremont Street, Boston, Mass.

An illustrated Journal of Constructive and Decorative Art, devoted to the Interests of Architects, Builders, Decorators, etc.

15 cents per copy; $7.50 per year; $6.00 in advance; 12 Monthly Numbers with Detail Sheet, $1.75.

The "Advertisers' Trade Supplement" is maintained in the interest of advertisers in the *American Architect and Building News.*

Nothing in the World like it.

The Decorator and Furnisher.

An elegantly printed and illustrated monthly paper, treating of every part of the

Furnishing and Decorating of the interior of the house.

Among the writers and artists contributing for the coming year will be: —

John La Farge, Miss Mary Gay Humphrey,
Benn Pitman, Mrs. T. M. Wheeler,
Miss M. E. Tillinghast, Mrs. M. E. Hawes,
Henry B. Wheatley, E. W. Poley,
and many others.

"Not only the most imposing, but certainly the most artistic publication and the highest in merit that has seen the light here." — *N. Y. Com. Advertiser.*

"Established as a well-edited and most useful periodical." — *N. Y. Times.*

"It is made up wholly of original matter and that of the best quality." — *Chicago Inter-Ocean.*

"A piece of high art. * * The finest we have seen of late, even in Paris." — *American Register, (Paris).*

"America possesses nothing that lives in the same atmosphere. * * It is standard." — *Boston Times.*

"Handsomely printed, with numerous designs for decoration and furnishing." — *Christian Union.*

"Practical enough for the trade, and handsome enough to adorn the study-table." — *Boston Post.*

"Every taste will find something to suit its wants." — *Chicago Tribune.*

"Dedicated to everything calculated to make house interiors beautiful." — *Springfield Republican.*

"Practical articles on the necessities and elegancies indispensable to housekeepers." — *Mail and Express. (N. Y.)*

"Readable articles by well known writers, and a profusion of elaborate designs." — *N. Y. World.*

"Must prove a great educator of the popular taste." — *Burlington Hawkeye.*

"Contains contributions by men of established reputations." — *Evening Post. (N. Y.)*

"The journal promises to be an exceptionally good and successful one." — *American Architect.*

Single copies 35 cts. Subscription $4.00 per year.

A flexible cover to preserve the numbers, 40 cts. extra, to subscribers.

Sent on trial for three months for one dollar.

Address

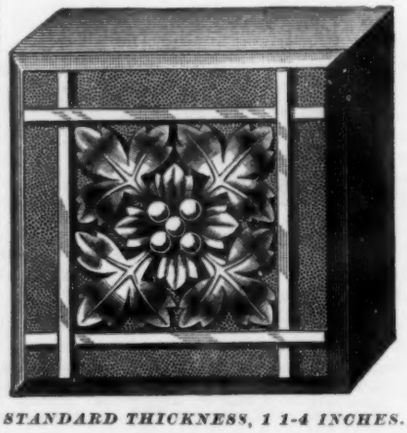
THE DECORATOR & FURNISHER,
Office, 21 Park Row, P. O. Box, 1543.
New York City.

Corner Blocks,

FOR

Door and Window-Casings, etc.

A.



STANDARD THICKNESS, 1 1-4 INCHES.

Send for Price List.

NEW YORK WOOD TURNING CO.,
134th Street, near 3d Avenue.

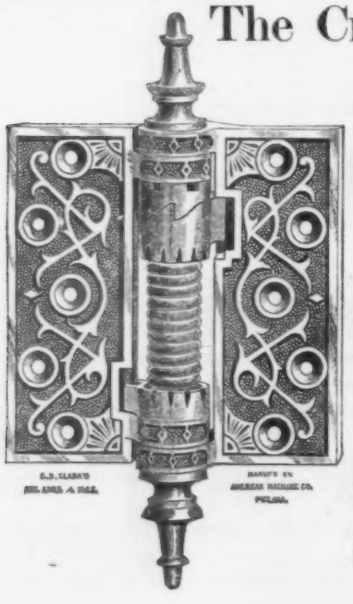
The Crown Spring Hinges,

FOR SOLID DOORS.

C. B. Clark's Latest Improvements, Patented April 4, 1882.

MANUFACTURED BY

AMERICAN MACHINE CO.,
PHILADELPHIA.



These Hinges have loose pins, are simpler in construction, less liable to get out of order, and the tension of Spring is more easily put on or released than in any other Spring Hinges in the market and without the use of any special tools. There are no loose pieces to the Hinge to be lost or mislaid. All joints are milled, the pins turned and pin holes drilled.

SIZES.

SINGLE ACTION.	Jap'd.	Jap'd with Nick. Tips.	Nickel Plated.
4x4 for doors 1 -1⅛ in. thick, per pair,	$1.50	$2.50	$3.00
5x5 " 1⅛-1⅜ " " "	2.00	2.75	4.00
6x6 " 1⅛-1⅜ " " "	2.50	3.50	5.00
DOUBLE ACTION.			
4 in. for doors 1 -1⅛ in. thick, per pair,	3.00	4.50	6.00
5 " " 1 -1⅜ " " "	4.00	5.50	8.00
6 " " 1⅛-1⅜ " " "	5.00	7.00	10.00

DISCOUNT TO THE TRADE.

THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. XVI. Copyright, 1884, JAMES R. OSGOOD & Co., Boston, Mass. No. 445.

JULY 5, 1884.

Entered at the Post-Office at Boston as second-class matter.

CONTENTS.

SUMMARY: —
Throwing down Buildings in New York by adjacent Excavations. — The Excavations at the City of Tanis — The Fifth International Sanitary Congress. — Extending Sewage-Irrigation to Achères and the Forest of St. Germain. — Providing for the Absorption of the Surplus Flow. — The New Eddystone Light-house. — The Career of M. Henri Nénot. . . . 1
TERRA-COTTA. . . . 3
MODERN HIGH EXPLOSIVES. . . . 4
PROFESSIONAL EDUCATION ABROAD. . . . 5
THE ILLUSTRATIONS: —
Club-house, Grand Rapids, Mich. — The "Plaza" Apartment-house, New York, N. Y. — The Luther Monument, Washington, D. C. — Competitive Designs for the Garfield Monument, Cleveland, O. — Sketch for a Memorial Church. . . . 6
STRENGTH AND WEAR OF BUILDING MATERIALS. . . . 7
INFECTIOUS DISEASES IN FURNISHED HOUSES. . . . 7
THE BUILDINGS OF THE LATE DUKE OF PORTLAND, AT WELBECK. 8
BRONZE CASTING. . . . 9
CONCRETE FLOORS AND PAVINGS. — III. . . . 10
COMMUNICATIONS: —
The Efflorescence on Brickwork. . . . 10
NOTES AND CLIPPINGS. . . . 11

EVERY one remembers the Grand-Street accident in New York, two years ago, by which a building fell upon its inmates, killing and injuring several. Last week another building on the same street, a few rods away, fell in nearly the same manner, burying three women in the ruins, one, at least, of whom was instantly killed. The immediate cause of the collapse seems to have been the excavation of a deep cellar on the adjoining lot, and the insecurity of the wall was observed, and the inmates ordered to abandon the house through the agency of the Bureau of Buildings, on the very morning of the accident, the last tenant being on the point of leaving the building when it fell. The transformation which Grand Street, like Bleecker Street, and the other cross streets which come nearest the elevated-railway stations, is now undergoing is very favorable to accidents of this kind. Unlike Bleecker, Eighth and Fourteenth Streets, which were once fashionable, and are occupied by buildings of considerable size, and of reasonably good construction, Grand Street is filled for the most part with three-story houses, wretchedly built, and far advanced in decay. The erection in the midst of such structures of the huge and costly stores which are rapidly supplanting them is, at the best, a dangerous operation for the weaker buildings, and it is only surprising that more catastrophes should not have occurred. The main element of danger is, of course, the risk of undermining the miserable rubble foundations of the small houses in excavating the cellars of the stores. Under the New York law any person is entitled to dig out his own land to a depth of ten feet below the curbstone, without regard to the effect of the excavation on his neighbors, who, if the footings of their cellar walls do not happen to be set so low as that, must shore up and underpin them at their own expense, or allow them to fall, if the earth should escape from beneath them. It is hardly necessary to say that the proprietors of small tenement houses, who are not usually the most prudent or the most liberal of mankind, are much disposed to trust to luck in such cases, rather than incur the expense of making their property certainly secure; and the Bureau of Buildings has no more difficult or disagreeable task assigned to it than that of compelling the owners of such houses to take the simplest precautions against accident. The present statute allows obstinate persons to interpose so many delays in the execution of the orders of the Inspector of Buildings that a cellar may be dug down many feet below the adjoining wall before any official action can be taken; and so long as the new cellar does not exceed ten feet in depth below the curb, the law gives no authority for hindering or stopping the work of excavation; so that the fact that so few accidents of the kind have occurred is good evidence, both of the promptness of the Building Bureau in endeavoring to have the necessary precautions taken, and of the forbearance of the builders and owners of the large buildings, who must in many cases have submitted voluntarily to delays and inconveniences which the law does not require from them, rather than expose the neighboring proprietors to the consequences of their own folly.

WE are sorry to learn that the subscription list for contributions to the work of excavating the city of Tanis in Egypt, opened by the Rev. W. C. Winslow in Boston, contains as yet less than a hundred names. The sum suggested as a suitable one for subscribers, five dollars, is so modest that a very small amount of antiquarian zeal would be indicated by the sacrifice, but even this seems to be more than the average man can claim. Perhaps the response to Mr. Winslow's invitation may be quickened by the news that already, before the ground has been much more than scratched, an enormous statue of Rameses the Great has been discovered; in fragments, it is true, but so disposed as to be easily restored. The figure is of granite, and, placed in its original position, would be one hundred and fifteen feet high. Whether it was originally made of a single block we do not learn, and perhaps its broken state will prevent us from ever knowing, but if so, the quarrying of the block, and the transportation and placing of the statue, must have been a far more difficult task than the erection of the obelisks, the tallest of which exceeded this statue very little, if at all, in height. It is hardly necessary to say that no other statue in Egypt approaches the scale of this. The two Memnon figures, which are said to have been cut from rocks existing naturally on the spot where they stand, were barely half as high in their original condition, and even the largest rock-cut bas-reliefs of the same king in Nubia are far inferior in size. If the other architectural and artistic ornaments of Tanis corresponded to this specimen, the world, or at least that small part of it which takes an interest in archæology, has some lively sensations in store for it.

ARCHITECTS will be interested in the programme of the Fifth International Sanitary Congress, which we find in the *Builder*. In 1882, the Fourth Congress was held at Geneva, and adjourned to meet two years after at the Hague. Independent of the attractions of a visit to the Hague, one of the pleasantest cities in Europe, the Congress of this year promises to be more important and useful than any that have preceded it. Everything in the way of private and public hygiene comes within its scope, and a great variety of papers are to be presented by persons of the highest distinction. The renowned Pasteur is to read a discourse upon the attenuation of virus, which, although particularly intended for medical men, will attract the attention of all who know anything of its famous author and his investigations. One of the most distinguished of architects, M. Emile Trélat, is to read an essay upon the temperature and condition of the air within dwelling-houses, and many similar subjects are appointed for discussion. It is very easy to obtain admission to the Congress, by subscription, which is set at ten Dutch florins; and this subscription entitles the applicant to a copy of the printed Proceedings. More than five hundred persons subscribed to the Congress at Geneva, and of these nearly four hundred attended the deliberations; and the committee which has the matter in charge suggests that if the Congress of this year is equally favored, members who wish to be comfortable during their stay at the Hague will do well to make early application for accommodation, since the hotels at the Hague are neither large nor numerous. The sessions of the Congress open on Thursday, August 21, and continue until the following Wednesday. The general Secretary is Dr. Van Overbeck de Meijer, Professor of Hygiene at the University of Utrecht, Holland.

THE plan for disposing of that part of the sewage of Paris which is not now utilized at Gennevilliers by irrigating the plain of Achères and St. Germain seems to be on the point of execution; or at least, the inhabitants of St. Germain are so far convinced that it will be carried into execution unless they do something to prevent it that they have chosen a committee to resist the project, and have held formal discussions with the city officials. The argument which the Committee of Defence of the Forest of St. Germain presents in opposition to the irrigation scheme consists mainly in the assertion, which certainly has a basis of truth, that the result of the compulsory and unceasing discharge upon the fields of Achères of the three hundred thousand cubic metres of foul water a day which the new sewers are intended to deliver there will be very different from that obtained at Gennevilliers, where irrigation is under the discretion of the farmers, who can, and do, shut the gates of the irrigating canals in

rainy or frosty weather, or when for any other reason they think that their crops have had enough of the sewage. The channels at Gennevilliers are provided with overflows, leading directly into the Seine, so that the stoppage of the conduits does no harm; but at Achères it will be impossible to dispose of the surplus flow in this way, and the land must take the sewage, whether it can absorb it or not. The consequence of this, according to the committee, will be the destruction of the fertility of the soil, "which will grow nothing but typhoid fevers," and the formation of a filthy swamp in what is now the most beautiful suburb of Paris.

TO all this M. Planat, the editor of *La Semaine des Constructeurs*, makes reply that so far as regards irrigation simply, there is no reason why the application of sewage to land should not be as profitable at Achères as at Gennevilliers. In the latter town the introduction of irrigating conduits was at first resisted, as now at St. Germain; but the utilization of the flow, which was entirely voluntary, proved so advantageous to the farmers who tried it that now the entire region is regularly irrigated, and, we may add, so many farmers have flocked to the place from all parts that the value of land capable of receiving the sewage has more than doubled within a few years. That at Gennevilliers the surplus flow can be turned into the Seine at the discretion of the gardeners is true; but as a substitute for this at Achères the engineers of the city have provided for setting apart a large tract expressly to receive surplus sewage, which can be turned from the cultivated fields upon it in the same way that it is turned into the river at Gennevilliers. Just how much of this waste land will be needed to absorb the sewage not used on the farms it would be difficult to say; but the city intends to take all the land necessary for carrying out the system in the best possible manner. Under the present plan, the irrigated tract is to comprise about twenty-five hundred acres, but if better results would be obtained by treating a larger territory, land suitably situated for receiving the flow can be had to an indefinite amount along the river valley. Although the plan of setting apart waste land to absorb the surplus flow of an irrigation system is a costly one, since a much larger tract must be acquired, there can hardly be a question of its real economy in enabling those who use the fertilizing elements of the sewage to do so to the best advantage; and it must be remembered that unless the experience of Gennevilliers is exceptional, the privilege of receiving the sewage in such a convenient way would soon be so highly prized that even the waste lands would be brought up to an equal value with the rest.

ARCHITECTS and engineers who have to do with constructions exposed to the action of the sea will be interested in the description given in the *Builder* of the new Eddystone light-house, just completed at the side of the famous structure erected by Smeaton, which, although still practically perfect, has been undermined by the action of the waves upon the rock on which it rests, and is now dismantled. Every one remembers the peculiar profile of the Eddystone light-house, which, by its great expansion at the base, converts the flow of the waves which attack it into a vertical impulse, greatly lessening its force, while presenting at the same time a large mass of solid stone to meet it; and most architects know, also, something of the ingenious dovetailing by which Smeaton connected the blocks of granite of his structure into an inseparable mass. Both these precedents have been followed in the new light-house, and some improvements have been made on Smeaton's design. It was found, for instance, that in the old light-house the waves, thrown upwards by the curvature of the tower-walls, struck with such force upon the under side of the gallery around the lantern, sixty feet above high-water mark, as to lift it away from the tower, and during the severest storms the lantern itself was so overwhelmed by the upward rush of the water as to obscure the light. Both these difficulties have been met in the new light-house. To diminish somewhat the tendency of the waves to climb up the curved sides of the tower, an obstacle has been interposed in their course, in the shape of a cylindrical base, forty-four feet in diameter, and twenty-two feet high, against which they will dash directly. The force of the sea striking in this way is enormous, a "marine dynamometer," made for the purpose, having registered an actual wave-pressure of six thousand pounds upon every square foot of the surface receiving the impact; and the base of the new tower is of solid granite, in blocks dovetailed together, both vertically and horizontally, and laid in Portland cement. Above the base the light-house takes the conoidal form of the old one, but is carried up without cornices or projections to a height of one hundred and thirty-three feet, bringing the lantern nearly twice as far above the sea as in Smeaton's building, and well out of reach of the highest waves. For about twenty-two feet above high-water mark the tower is solid; above this the walls gradually diminish in thickness from eight and one-half to two and one-half feet. Considering the extreme difficulty of the undertaking, the cost has been very moderate, only three hundred thousand dollars having been spent upon the work; while Smeaton's light-house, half as high, and containing barely one-fifth the material, cost two hundred thousand.

AS a useful illustration of the work which serves to form the taste of the great French architects, we would like to call the attention of our younger readers to the account in *La Semaine des Constructeurs* of the drawings exhibited at the Paris Salon of 1884 by M. Henri Nénot, now just past his student days, but already famous as having carried off the highest prize in two of the greatest competitions of the time, — that for the Victor-Emmanuel Memorial at Rome, and for the enlargement of the Sorbonne at Paris. The subject chosen by M. Nénot for his Salon drawing was a restoration of the sacred enclosure of Apollo at Delos, and M. Périer, the critic, speaks of it as a work "which it is impossible to pass without lingering long before it." This alone would be praise from so careful a writer, but the merit of M. Nénot's work is much increased by the fact that the ruins at Delos are in the most fragmentary condition, even the trace of the foundations of the sixteen buildings which occupied the enclosure being in many places lost, while all details must be recovered from the comparison of small pieces of capitals, columns and entablature. The labor involved in this, which would have deterred any ordinary student, seems rather to have attracted M. Nénot, and his devotion was rewarded by an inspiration which seems to have given to his work a singular interest.

WHERE are many persons, no doubt, in this practical country, who will fail to see the value, to an architect, of such labors as that which M. Nénot is justly proud to have accomplished; and we are glad to be able to point out his extraordinary professional success in justification of our opinion, that the restoration of antique monuments is one of the most profitable and invigorating exercises which the student of architectural design can undertake; for the reason that, beyond any other, it leads him to try to trace the reasoning, and discover the methods of men who built at least sincerely and rationally; while it serves to develop his imagination by the effort to throw himself in spirit among the Greeks or Romans whose works he is endeavoring to reproduce, at the same time that, by the necessity which it imposes upon him of following with exactness such details as he has, it keeps him always in the path of pure and elegant design. Of these three advantages which practice in restorations from the antique offers, the greatest, perhaps, is to be found in the opportunity which it gives for the exercise of the imaginative faculty. It is not unusual for persons who know no better to advise architectural students to choose for practice in design the more commonplace subjects, such as country-houses, railway-stations and the like, on the ground that these are "useful," while the unaccustomed subjects usually given in the good architectural schools are "not practical." The fact is that the exact converse of this is true. The function of schools of architectural design is not to multiply bad plans for two-story dwelling-houses, but to strengthen the mental powers of the students who attend them; while to encourage these students in the repetition of forms with which they are already familiar, and among which they cannot discriminate, is to paralyze instead of instructing them. We need not expatiate here on the value of imagination as a "practical" quality; every scientific man will testify to its importance; what we desire to point out is that in the study of architecture, whether in construction or design, the place which is occupied in other sciences by original investigation must be supplied, not by the preparation of feeble variations on familiar themes, but by the imposition of problems completely novel; of course arranged with proper care, but presenting questions which must be solved "out of the heads" of the students; that is, by that obscure, but difficult mental labor whose efforts we call imagination.

TERRA-COTTA.

TERRA-COTTA is the name applied to architectural enrichments of brickwork. The clay of which this material is made is of a peculiarly plastic character, thereby making it susceptible of artistic finish, and allowing it to be moulded into pleasing delineations of animate forms, foliage, and conventional ornaments.

Terra-cotta has played an important part in the civilization of antiquity. The Chaldæans were obliged from the very nature of their surroundings, to employ clay for many purposes for which no other people have used it. The dwellers in that vast alluvial plain of the Tigris had constantly under their feet a clay that was naturally suitale for modelling.

This material, being easily obtainable and capable of conversion into great durability, was unequalled by any other for many of the purposes of civilized life. While in a plastic state it easily received the impression of any figure that it was desirable to impart to it; its yielding surface enabled characters to be impressed upon it very rapidly, in fact, almost as expeditiously as they could be traced upon papyrus, and certainly much more quickly than they could be cut upon wood by aid of the chisel. But in addition to the cheapness of clay, it possessed, as solid and fired terra-cotta, a duration greatly in excess of that of either wood or papyrus, for when once safely burned it was indestructible, except through sheer wantonness. It is in the shape of tablets of terra-cotta that the best history of Chaldæa comes to us, and although they are covered with strange cuneiform inscriptions, there is not the same tendency to doubt them that there is with some modern histories. Many of these early productions of terra-cotta, even while of less durability than that now made, are found in Chaldæan ruins in which the stone that was employed has been steadily disintegrating for many centuries, while the terra-cotta has been left as perfect, in many cases, as if recently produced.

In faithfully made and vitrified terra-cotta we have the great and only lasting triumph of man over natural productions; for timber will rot, stone — even granite — will disintegrate, iron will oxidize, these and all other materials will succumb to the action of fire and other destroying elements; but properly-made and thoroughly-burned terra-cotta will pass through centuries and be the last to yield to those influences to which all natural productions must give way, the material being not only absolutely fire-proof, but also, in all architectural employments, practically time-proof and indestructible.

I cannot pay a more eloquent tribute to terra-cotta than by making a free translation from a few sentences of the French of Jacquemart: —

"In the grandeur of the expiring Roman Empire, when the people were wrapped in fine silk and purple, and when to their sandals they were covered with rich embroidery, pearls and other precious stones, even when vessels of gold, jaspar, sardonyx, and onyx had superseded the earthen pottery for ornaments of the temples and with the powerful, and there was symmetry in every line of the commonest forms employed in architecture — when golden-grounded mosaics illumined the domes, and the rich columns were formed of many-colored spirals, and when magnificent veils of most costly silk were spread before the altar, then the humble terra-cotta introduced itself among all this splendor.

"The bold cupolas, which the eye hesitates to measure under their dazzling images, which if constructed of stone would have sunk of their own weight — these cupolas owe their existence still, to excite our admiration, to the judicious employment of terra-cotta in hollow form. The ceramic art was drawn upon in a way not usually employed, and the ingenious masonry of these masterpieces of architecture was formed by kinds of truncated bottles, strung one into the other, and disposed in parallel curves.

"Other branches of pottery had so entirely disappeared as to leave us no mark of their having been employed at all; but in the expiring civilization of the period, a grand and noble part is bequeathed to terra-cotta to perform in the often exacting positions of architecture, and help perpetuate the achievements of man to the far distant coming ages."

The term terra-cotta is of Italian derivation, and literally translated means cooked or baked clay. This term was more appropriate to the ancient terra-cotta, which was usually less burned, not so homogeneous, and coarser in texture than with us, but that is not a true description of the process as now employed in converting the artistically-moulded clay into finished terra-cotta.

From the definition cooked or baked clay, it might be supposed that terra-cotta did not receive so great a degree of heat as is applied to bricks during the process of burning; but this is not true, as terra-cotta requires a greater degree and a more regular distribution of heat during the firing than are either given or generally required for bricks. The reason for this is that less lime and alkaline fluxes are contained in terra-cotta clays than in brick clays, and the former being stronger and more refractory, naturally require greater heat to compel them to part with the water chemically combined with them.

Terra-cotta was largely used for architectural decorations in Greece, Etruria, Pompeii, Rome, and Mediæval Italy, and it was in the clay-plains of Northern Italy that terra-cotta was first predominantly employed over other materials in architectural construction and ornamentation, and the inspiration of modern designs in architectural terra-cotta is largely drawn from these works, especially those structures erected from the middle of the thirteenth until the commencement of the sixteenth century.

In England, the friezes, cornices, and other highly ornamental work in terra-cotta of the Manor House at East Barsham and the Parsonage House at Great Snoring, both in Norfolk, erected during the reign of Henry VIII, are worthy of particular notice, and the use of terra-cotta for decorative panels and bas-reliefs appears to have been popular during his time.

The gateway of York Palace, Whitehall, designed by Holbein, was decorated with four circular terra-cotta panels, which are still preserved at Hatfield Peveril, Hants.

The gateway of the rectory of Hadleigh Church, Suffolk, erected at the close of the fifteenth century, was very carefully restored about thirty-five years ago, the terra-cotta for the purpose being creditably reproduced at the Tyham Kilns, near Hadleigh.

From the latter part of the fifteenth century until after the reign of Elizabeth, terra-cotta was used only in large and expensive buildings; but at the beginning of the eighteenth century the use of terra-cotta was by no means uncommon in Great Britain, but soon after the reign of Queen Anne its use was discontinued, Its modern employment is but a revived taste, and is the result of laudable efforts on the part of a few architects to secure lasting and honest ornamentation in lieu of that sham and dishonest effect procured through the employment of stucco and galvanized sheet-iron, the latter material not being so common in Europe as in this country.

Some of the coats-of-arms seen over many of the shops in London are made of terra-cotta, and in those, having been properly vitrified in burning, the form is still good, and the exposure to the elements, often for more than a century, has in no way affected the lines.

Many buildings of recent construction in England and Germany, as well as in this country, have been effectively enriched through the judicious employment of terra-cotta. In England, the South Kensington Museum, the Charing-Cross railway-station and hotel, the Dulwich College, and the great Albert Hall; and in this country the United States Pension-Office Building at Washington, D. C., and many other recent buildings in the cities of New York, Philadelphia and Boston, offer admirable examples of the architectural effect produced by the blending of brickwork and terra-cotta, being generally both harmonious and attractive.

The matter of design and the manner of treating terra-cotta are subjects for much thought, and require not only artistic ideas, but the exercise of good judgment. Taste and expression are necessary, but this must not be accomplished at the cost of conveying a sense of weakness. Good construction, next utility, and last decoration, is the order in which the design should be carried out. The last requires an artist thoroughly versed not only in form and proportion, but who is inventive, in order to make the ornament harmonize with the purpose of the building, and also decorative in the place it is to occupy.

For special designs of this character the offering of premiums has been found to work well, as it stimulates ambition and thus develops the best ideas. The plan is worthy of a more extensive trial than it has yet received in this country, as we owe our progress in the production of architectural terra-cotta up to this date almost alone to the private designs of architects.

Truth is an absolute necessity in all terra-cotta designs, and as a desire for real in the place of sham materials is the cause of its revived use, why should the object of its employment be defeated? It is not considered an honest treatment of material to make painted and sanded wood take upon itself the appearance of stone, and when terra-cotta is made in imitation of that material, and for the purposes of deception, it is equally an error, and the responsibility for it should rest as heavily upon the architect who allows it as upon the manufacturer. All colors that naturally result from the mixtures and combinations of the clays are allowable, but there should be no effort to imitate other substances, as one of the greatest pleasures which arise from the use of terra-cotta in architecture is the satisfaction engendered by the simple merit of the material.

The ease and economy with which terra-cotta can be moulded into ornamental designs for mantels or finishings for fireplaces, as well as for finishings for chimney-shafts, have stimulated the production of a great variety of designs for these purposes, and especially for the latter. The chimney-caps produced in terra-cotta are of all suitable shapes and sizes; they are made with open as well as with protected tops. The stereotype designs are often good, but they just as often show a great poverty of ideas as regards proportion and ornamentation of the parts. The designs for chimney-shaft finishings vary from a small cap, with a low base and small beveled chamfer at the bottom, and a light astragal moulding encircling the upper portion and dividing the plain surface, to those in which the parts are of different shapes, variously proportioned and moulded, ornamented in low

relief, and the top terminating in a gable roof ornamented with crockets and a finial. In many of these ornamental chimney-caps all the known and some of the undiscovered stages of Gothic architecture are brought out in incongruous confusion. In some of the simpler ones the designs are much more correct in form and ornament.

The production of objects in terra-cotta from models and reproductions from casts are chiefly mechanical, but oftentimes call for experience and skill. The clay, after being brought to the desired consistency, is formed in a mould, usually in several parts, the clay being pressed into them by the hand, and as soon as one section is finished another is added, and so the moulding of intricate pieces of terra-cotta progresses.

The making of moulds for terra-cotta, when the design is intricate, is a matter of great nicety, and requires careful fitting of the parts, which is not always easy, from the shrinkage of the parts not being the same. The making of the moulds is generally one of the chief delays in the manufacture of terra-cotta for buildings. These moulds cannot be changed at will, nor can alterations be made in the ornaments as the work proceeds, not only because the moulds cannot be changed, but because the pieces cannot be cut without ruining the design.

The first work of the architect, after his plans are accepted, should be the preparation of all the details for the terra-cotta portion, as each piece has its own place and no other will fill it in the building in that position for which it was designed. There can be none of that hurry and hasty preparation of details now so common on both sides of the Atlantic; there must be carefully matured working-details for this material, but the manner of joining the parts can best be left to the modeller, who can use locked, rebated, or flanged joints as may be best.

It is necessary to so arrange the moulds as to give an equal thickness to all parts of the body of the material, in order to lessen the chances of cracking in drying or warping in the kiln. When the shaped clay is withdrawn from the mould, or after it has been modelled, the object is usually dried by exposure to the sun or air, or near the hot kilns.

One of the hardest colors to obtain uniformity in the tint is buff, and to secure this rich, pleasing color in terra-cotta requires long burning and a highly experimental knowledge of firing, as well as a thorough acquaintance with the clay and its behavior in the kiln.

Coal should not be used in firing light-colored terra-cotta, as, although the usual products of combustion are separate from the ware, sulphurous fuel darkens and tarnishes the surface. Wood should be used in burning light-colored terra-cotta; but for red or darker-colored ware no objection can be urged against the use of coal.

MODERN HIGH EXPLOSIVES.[1]

SOME years ago the steamer "Streeter," carrying amongst other freight eight thousand pounds of dynamite, caught fire from her furnaces when out on Lake Erie and — was burned to the water's edge without explosion. When we consider the consternation now so frequently caused by the finding of a single dynamite cartridge—or what is taken for such—near a London building, one cannot but picture the havoc that the explosion of four tons of this explosive might have occasioned even out on Lake Erie. Those ignorant of the properties of dynamite might be expected to exclaim against the criminality of the steamer's agents in shipping such dangerous freight, whereas it was as harmless a passenger as any one could wish, the fact of its burning quietly proving that it was properly packed for transport in paper packages, or wooden cases, and somewhat loosely at that; that it was perfectly dry, and was not so surcharged with nitro-glycerine as to allow this to exude in a free state, and drop onto the floor, where a chance step, the fall of some light article, or friction produced by the rolling of the vessel might have produced a slight initial detonation which would have exploded the whole mass; and, lastly, that it was not packed tightly in metallic cases which might have been exploded by direct or sympathetic concussion, or might have confined the gases of combustion until the heat of the conflagration had reached the explosive limit, 360° Fah.

Dynamite is not a good thing to be handled by the inexpert, or carelessly by the expert, but it is an amiable and useful ally of him who knows its peculiarities, and in this it differs from its progenitors, gun-cotton and nitro-glycerine, which are much more uncertain in their action, and will probably always be dangerous to use.

Nitro-glycerine was discovered in 1847 by Sobrero, at Paris; but it was not until 1863 that any one was bold enough to make it in large quantities; then the Swedish engineer, Alfred Nobel, took it up, and it is to his skill and persistence, in face of dangers and governmental opposition, that the manufacture and use of modern high explosives is due more than to any one else.

Nitro-glycerine is produced by the action of nitric acid on glycerine, the nitric acid being kept in a highly concentrated state by the synchronous admixture during distillation of sulphuric acid. The distillation of the acids continues about twenty-four hours, after which compressed-air is passed through the mixture to take up the nitrous acid. Roughly speaking, the acid mixture is then mixed with the glycerine in large vats of ice-cold water, a process attended with much danger, as the reaction developes much heat, and the inflow of the glycerine has to be regulated with the greatest care, the workmen attending to the process each keeping a thermometer constantly in his hand, and if too much heat is evolved the mechanical mixer or dasher is made to revolve more rapidly. If the rise of temperature cannot be checked the mixture is instantly run off into large vats of water and drowned. If the mixing is successfully completed the nitro-glycerine settles to the bottom of the mixing-tank, and is covered by six feet of water. It is then drawn off into other vats, and subjected to five different washings. It is next poured into crocks, allowed to stand for awhile, and after the impurities are skimmed off it is left a chemically pure, colorless liquid ready for packing. It is then put into tin cans and frozen, after which it is ready for storage in cold magazines, or for transport in very carefully devised packages.

For use nitro-glycerine must be thawed, and it is the careless thawing of cartridges by ignorant or forgetful workmen that caused the many disasters in early years which gave the mixture so bad a name, and led to prohibitory legislation against its use and manufacture, and, more happily, set inventors to devising mixtures of less harmful nature, in which its wondrous powers could be more or less fully utilized. These researches resulted in the discovery of dynamite or giant powder, forcite, lithofracteur, Brain's blasting-powder, Colonia powder, lignose, dualin and many others, and lastly explosive gelatine, which seems to promise to be the coming explosive for careful users.

Nitro-glycerine being a liquid has to be packed in metal cases, and thereby lies open to all the dangers of violent accidental concussion, which generally will produce an explosion, we say "generally," for a glass bottle of nitro-glycerine has been thrown against a rock without producing an explosion. On the other hand, at high temperatures, or with an impure compound which has begun to decompose, the dropping of a five-cent piece upon it is sufficient to cause a disaster. It was the impossibility of protecting nitro-glycerine in its liquid and, speaking broadly, non-compressible form that led to the invention of the dynamites and kindred compounds, the distinguishing common characteristic of which is a possibility of enduring a considerable amount of pressure without peril.

Dynamite is a mechanical mixture of *kieselguher* or infusorial earth with from 30 per cent to 75 per cent of nitro-glycerine; the percentage of nitro-glycerine being greater according as the absorbent approaches complete saturation, and the compound in consequence, both more active in its effect and more dangerous to handle. As the infusorial earth is merely used as a container of the nitro-glycerine, and has no explosive properties of its own, this species of dynamite might be termed "safe nitro-glycerine." But there is another series of dynamites in which the nitro-glycerine is compounded with chemically-active absorbents, the effect of which is to retard the explosion slightly, accumulating the entire effect of the charge, and ensuring the explosion of every particle of the nitro-glycerine.

Dynamite is usually exploded by detonating caps of intensity varying with the grade of the dynamite used; it can also be exploded by concussion, by red-hot iron or by rapid heating to a high temperature in a confined space. In the open air a dynamite cartridge may be lighted safely, and will burn like a Roman-candle, but more slowly. It has been subjected to much rough usage in transport, and otherwise by men unconscious of what was passing through their hands; it has burned up in buildings — we remember one instance of a wagon-load of it catching fire in some way while passing through a Pennsylvania town, and while the inhabitants all scattered in dismay, the teamster, undisturbed, drove (very carefully, to be sure, so as to avoid any jar) out beyond the town limits, and then unharnessed his horse, and let the load burn up in peace; a mule loaded with it has fallen over a cliff, and though killed herself the shock did not produce an explosion, and in innumerable other ways it has stood such tests without producing explosion that should prove it to be absolutely safe, had not seemingly precisely similar adventures produced disastrous results. The best way is to treat dynamite with much respect, and to beware of any package containing it which exhibits any moisture — such moisture will be pure nitro-glycerine, and, consequently, an extremely perilous neighbor.

Wood-pulp is used as the principal absorbent in lignose, dualin, and several other explosives, but as it gives out very obnoxious gases when used in mines these compounds are less used than the more ordinary forms of dynamite.

Explosive gelatine is a gelatinous (when frozen) compound of collodion (dissolved gun-cotton), camphor and nitro-glycerine whose

[1] "*The Modern High Explosives*," Nitro-Glycerine and Dynamite: their manufacture, their use, and their application to mining and military engineering. Pyroxyline or Gun-Cotton: the Fulminates, Picrates and Chlorates. Also the chemistry and analysis of the elementary bodies which enter into the manufacture of the principal nitro-compounds. By Manuel Eissler, mining engineer. New York: John Wiley & Sons, 1884. Price $5.00.

properties have not yet been fully investigated: but a report in the *Revue d'Artillerie* for 1879 states that it is insensible to shock, to friction or to the action of water, and does not decompose except at very high temperatures. To explode it an exceptionally powerful detonator is needed.

Apart from the general fascination which the subject of explosives exercises on the American mind — perhaps from recollections of the boyish delights of the early Fourth-of-July morning — this book is of a certain practical usefulness to the architect, especially to him who in the West has so often to act as engineer as well as architect. Much of practical use can be found in the chapters on "Big Blasts," and in those giving narratives of some of the most noted achievements of engineering where heavy blasting was necessary, and perhaps as useful as anything are the directions for blasting out piles and beams, and for throwing down buildings. The book is certainly interesting and well written, and seems to be complete and thorough.

PROFESSIONAL EDUCATION ABROAD.[1]

SO many years also have passed since I examined in detail the working of the schools of Berlin, Munich, Vienna and Stuttgart, that I may not be giving you the latest developments. The papers of the examinations held in Berlin for the degrees of *Bauführer* (building inspector) and *Baumeister* (architect) are published in our "*Transactions*" of 1859–60, and will show you the very high standard (much too high, I think, in mathematics) required there. I will only, therefore, explain generally the system of education in the above capitals of Germany and Austria.

German and Austrian Systems.— In Germany, or rather in Prussia, the student comes from the university or school with a good knowledge of geometrical drawing, or drawing from the cast, and of mathematics and physics. He first enters the office of an architect for one year, where he picks up what he can, as in England. He does not pay anything, his knowledge of drawing and of descriptive-geometry placing him in a position to be able to render assistance of value in return for the privilege of working there. He has then to pass a slight examination, and studies in the architectural school for two years. His attention there is turned to all the theoretical and practical points of the profession. He copies drawings made by well-known architects — if at Berlin, chiefly Schinkel's and Stüler's — and divides the time between making these copies and the composition of original designs (which are, of course, more or less adaptations of what he has learned in copying). He attends lectures on physics, mathematics, construction, ventilation and warming, sanitary science, and the principles and practice of estimating and writing specifications. At the end of the second year he passes an examination, and takes the title of *Bauführer*, or inspector. If he fails to pass he continues his studies. If he aims at a higher position he obtains an appointment on some Government building as an inspector or clerk (receiving a nominal salary) for three years, and then enters the school again in the first class to study for two years more, the studies being a very advanced kind. At the end of that time he passes an examination as *Baumeister* (literally "master of building,") and he then becomes a Government architect, or practices on his own account. At Munich and Stuttgart, the capitals of Bavaria and Wurtemburg, the practice still obtains, I believe, of studying one year in an architect's office before entering the architectural or polytechnic schools, as they are called. Two or three years are spent in the school, followed by examination. I am not aware whether the examination is recognized by the Governments of those countries.

In Germany, generally, architects and engineers study together in the same school; in France, architects, painters and sculptors.

In Vienna architects have their special academy; there are Classic and Gothic professors, with their respective *ateliers* or studios; in many cases the student passing from one to the other. There are complete courses of lectures, competitions in design, and examinations held at the end of each term, as in an English university or school. In 1863, or thereabouts, a new system of study was introduced which is worth notice. The senior students of the school, about twenty in number, make an excursion with their professor twice or three times in the year for a period of a fortnight or three weeks. They take up one or two important buildings and measure them, taking plans, sections, elevations and details (very similar to the work done in some of the series of excursions organized and carried out by the late Mr. Edmund Sharpe with the members of the Association). About £5 is allowed to each student by the Government, and his drawings become the property of the Academy. On returning to the school in Vienna, these drawings are worked out to a large scale, traced in lithographic ink, and reproduced, each student having a copy. Alternately with the making of these drawings they work out designs of their own, and naturally these designs are inspired with that feeling which they have imbibed when measuring and drawing the ancient edifices of the country.

So many years are spent in the German schools in training that comparatively few of the students make a Continental tour. In Vienna during one or two years after leaving the Academy the Austrian student travels through North Italy; and when the Quadrilateral was in their possession special facilities were afforded for the careful delineation of the finest works of the Italian Gothic and Renaissance styles. The superiority of modern architecture in Vienna to that in Germany generally I attribute to these Continental studies.

Before quitting the subject of foreign education it will be interesting to note that in Spain, throughout the length and breadth of the land, no one can practice as an architect who has not received the diploma of the Architectural School of Madrid. Except that the examination which follows after three or more years' studies in the school is preceded by a serious test in mathematics and physics I am unable to give you further information.

System of English Architectural Training.—May I venture to trespass a few minutes more to draw a parallel between English and foreign architectural training? The first great failing in England is that the student coming straight from school is not yet prepared to make that use of the practical training to be had in the office which is universally assumed. He has little or no knowledge of free-hand or geometrical drawing, of physics, mechanics, or any of the elements of architectural style; he flounders about, therefore, in the sometimes styleless design of the architect in whose office he may be placed, and acquires by the longest possible process a certain knowledge of a mixture of style and no style, second-hand; his powers of reasoning in design, as a rule, are not brought into play until his articles are terminated, and then want of time and absolute lack of training at once curtail his ideas and cramp his imagination. He has picked up an idea here and there in the office, and numerous details, but he finds himself unable to grasp the composition of a building of any size. In many cases he has never had an opportunity of visiting or studying any one of the buildings the drawings of which he has been continually at work on; and, therefore, supposing he has been thinking for himself, has never seen the results of his thoughts and inquiries (this observation applies more to London than to provincial students). He has, in fact, taken from three to five years to learn imperfectly what might have been learned in one or two if his mind had been previously properly trained to receive it.

French System.—If we turn now to France we find that foundation of knowledge laid which is wanting in England. Before the student enters any office his hand is trained to draw free-hand in the primary schools, and his mind developed with a knowledge of applied mathematics and descriptive-geometry. He enters an *atelier*, and the elements of style are learned in the *Ecole des Beaux-Arts*. Architectural drawing is carried to a high standard. Original designs are worked out, interspersed with instruction in construction of various kinds, and all the sciences cognate to architecture. The student works not so much in rivalry with his fellows as in *atelier* against *atelier*. This rivalry of the studios, which I described in the discussion following Mr. White's paper, is the most important feature in French architectural education. The isolated effort of one individual in rivalry with another may — nay, must — continually fail, because the development of style is not, and never can be, worked out entirely by one man. An original genius suggests a theory, a second carries it a little farther, by numerous others it is taken up, till at last this new idea becomes an established fact. A number of men working in one *atelier* form a school in friendly rivalry against others. Each student in it exerts himself to his utmost. The senior students advise the juniors in the study of their designs. The junior students in return work for the senior students, and acquire knowledge of style by so doing. The energies of both are brought into play, and this unison of feeling, this mutual co-operation enables the student to acquire great knowledge of style, rapidity of execution, and a serious study of design in a short time. In this we find the secret of the success of the French school, so far as it goes. Where, then, does it fail? It fails because a studio or *atelier* is not an office where work to be executed is drawn out, or a *chantier* where it is being carried out. Those students whose means necessitate their working for their living whilst their studies are continued from time to time at the school, do acquire that practical training which fits them for their vocation, and the most prosperous architects in the present day in France (and by prosperous I mean not those highest in rank, but who are the most sought after by clients), are not, as a rule, the past Grand Prix men, but those who commenced their practical training at an earlier period of their existence. On the other hand, it must not be forgotten that the high standard of design which exists in France is due to those architects who, in one sense, have sacrificed themselves and their prosperity (so far as a large income is concerned) by continuing their studies till they had

[1] From a paper by R. Phené Spiers, F. S. A., read at the recent Conference of Architects, London.

obtained the Grand Prix, and then devoting four years more to research and study in Italy and Greece. The important changes which have in late years been effected in the Ecole des Beaux-Arts show that the Government is fully alive to the defects in its system of education, and the practical character given to the *diplôme d'Architecte* may bring about an important change in the architecture of French buildings.

German System. — In Berlin this want of practical training is avoided by the student being obliged to study for one year in an architect's office before entering the school, and (if he aspires to the rank of *Baumeister*) by the spending of three years as inspector or clerk on Government buildings before he passes to his second and superior training in the school. Compared, however, with French education the German fails in art because he is linked with the engineer instead of with the painter or sculptor, and, further, by working in one *atelier* (viz. the school) and under one set of professors, the rivalry lies between student and student, and not between *atelier* and *atelier*. Add to this that the custom (whether it continues or not I do not know) of copying eternally the designs of Schinkel, his ceilings, staircases, cornices, etc., cramps the German architectural mind, and prevents its emancipation into a freer line of thought and imagination.

Educational Progress in England. — Of late years in England an immense progress has been made due chiefly to two causes: 1. The great development of the practice of drawing and measuring ancient buildings encouraged by the rewards of the Institute, of the Architectural Association, and of the Royal Academy, and the subsequent publication of such drawings in the *Architectural Association Sketch-Book* and other publications, and in the professional journals; and, 2. The extraordinary enterprise shown in the publication of drawings of actual modern buildings and of competitive designs in the professional journals of the day. Where all of them have been doing their best to supply a demand, it would be invidious to name specially any one of them, but there can be no doubt that the immense development and freedom of architectural design during the last ten years in England, and the rapid advance in draughtsmanship, is more or less due to the placing within the means of the poorest student a series of illustrations of the latest developments of architectural style. Two other educational sources must be here noted: 1. The meetings and classes of the Architectural Association, a society unique in its character, existing in no other country and in no other profession; and, 2. The Royal Academy, which, for obvious reasons, I should have refrained from mentioning, were it not to pay tribute to the services of those members of the Academy who, in late years as visitors, have given the students the advantage of their experience and of those other qualifications which have brought them among the elect. And here I venture to take this opportunity of rendering a personal tribute to the memory of one of our greatest artists whose loss we still deplore, the late Mr. George Edmund Street. The long experience I have had of architectural training enables me to judge, perhaps better than any one else, of the extraordinary value of the services which Mr. Street rendered in the Architectural School of the Royal Academy. The rapidity and range of his grasp of such subjects of design as were being worked out by the students, the wonderful fertility and originality of his mind, and the peculiarly happy way in which he (accepting the scheme of the student's work) turned it from bad into good architecture, and in a few minutes gave him the benefit of forty years' experience, promised to lay the foundation of a school of architectural designers in this country which would have left its mark in the architecture of this last quarter of the nineteenth century. His career as visitor in the Architectural School was, alas! too short, but the influence of his work remains with us; and among those who, in addition to his advice in the Academy, received their architectural training in his office, there are some who have already taken a foremost place in the profession, and others who are, I trust, destined to do so.

THE ILLUSTRATIONS.

CLUB-HOUSE OF THE PENINSULAR CLUB, GRAND RAPIDS, MICH. MR. B. L. GILBERT, ARCHITECT, NEW YORK, N. Y.

THE site of the present club-house was purchased in August, 1882, the price paid being $13,000. The building as it now stands cost about $22,000. The site is 66′ x 99′ in size.

The structure is of dark-red brick, with Ohio-stone finish the wall up to the water-table being rock-faced. The roof is of slate. The third or attic floor is designed for members' rooms, but has not been finished. The vestibule is shut in from Fountain Street by an iron gate. The walls on either side are of enamelled brick, relieved by coloring of white and blue where the finished wall meets the dull brick of the main arch. The ceiling is of colored Tennessee marble, in panels of different shades. The staircase hall is finished in oak, and the decorations are principally in red and bronze, producing a warm, cozy effect. The walls are of a uniform shade of dull red. On the Fountain-Street side is a massive stone fireplace with swinging crane. Above the arch, in old English letters, is the old Scotch phrase, "Weal befall hearth and hall." Opening into the hall from the west is the reading-room. The general treatment here is more varied than that of the hall, there being a greater contrast of colors. The walls are finished in oil combed-work, the monotony being broken by simple uniform figures which differ sufficiently in tint from the main coloring to relieve the eye. The ceiling is panelled in solid relief, with a large oval centre-piece of blue. The frieze is more pronounced in tint. Three large windows, two with broad arches and all with transoms, stained in Moorish design admit the light. At the north end of the room is a huge fireplace. The hearth and arch are of brick, and the shelving top of the mantel reaches to the ceiling. The hearth extends across the entire width of the room, and benches with carved arms face it, except where the fireplace intervenes, on three sides. Above the arch are the words, in old English, "Good fire, good friends, good cheer," reading up and down. The chandeliers here, as elsewhere in the structure, are of cut-glass with opalescent globes. The rods and standards are of brightly-polished brass, and are neat yet plain in design. The doors are mounted on anti-friction rollers, and are not intended to be kept closed. Handsome *portières* with gold threads and rich borders are hung so as to be drawn across the entrance. Opening from the intermediate landing of the stairway is the reception-room. The colors here are principally blues and grays, the wood-work being of California redwood. To the east of the main hall and opening into it is the general dining-room, which is finished in olive tints. On the west end of the second floor are the parlors, finished in olive tints. Over a wide fireplace at the north end, in old English letters, are the words, "The Peninsular Club." Two card-rooms occupy the Fountain-Street side of the building on this floor next the parlors, both being finished in slate tints, trimmed with butternut. The billiard-room occupies the entire east half of the second floor. It is finished in warm chrome tints, with sufficient blue to produce a pleasing effect. The room is about 30′ x 32′ in size, and the ceiling, finely traced with vines and flowers, is 22′ high. It is lighted by five large windows opening on three sides. The upper hall is finished in dark colors, and contains a large eleventh-century mantel. The wainscoting is high here, as elsewhere in the house, especially in the billiard and dining rooms, and carved spaces in the border show a scarlet background.

Messrs. G. H. Davidson and F. C. Miller had the brick, stone and wood work contracts. The decorating was done by Mr. Wm. Wright, of Detroit. The heating apparatus and gas-fixtures were supplied by Shriver, Weatherly & Co.

THE "PLAZA" APARTMENT-HOUSE, NEW YORK, N. Y. MR. CARL PFEIFFER, ARCHITECT, NEW YORK, N. Y.

THIS family-hotel is now in course of erection, facing the square known as the Plaza, on the west side of Fifth Avenue, between Fifty-eighth and Fifty-ninth Streets, affording a fine view of Central Park and its Fifth-Avenue entrance. Its dimensions are 200′ on the Plaza, 125′ on Fifty-eighth Street, and 175′ on Fifty-ninth Street. It is owned by Messrs. John D. Phyfe and James Campbell, who are also the builders of it. The cost of the building will be about $1,200,000. The building is to be thoroughly fire-proof; it will have an under-cellar, basement, eight stories, and an attic for servants and other rooms. The greater part of the basement is to be occupied as stores and offices; the eight stories above the basement are arranged for thirty-six apartments and a restaurant, from which the occupants can be supplied with meals in their own dining-rooms. The apartments of the central portions of the Plaza front are two storied; the parlors, libraries and dining-room on the floor below that of the bedrooms. Each apartment is also arranged to have a private kitchen. There are three elevators for the principals of the house, and three for the servants and baggage. There are three main stairways, and three for servants; the main stairs are to be of marble, and the servants' stairs of iron. All rooms have direct sunlight and air; there are no light-shafts. Provisions are made in the plans and in the construction of the building so that it can be changed to suit the requirements of a regular hotel. The basement and first story are faced with stone, the upper stories will be faced with the best of Philadelphia or Baltimore pressed-brick, relieved with stone, moulded brick and terra-cotta. The roof will be made of iron beams and brick arches, and be covered with brick pavings, so as to afford a promenade for the occupants of the house who, at the same time, can enjoy fine views of Central Park and the surroundings of the city. The roof, although 125′ above the sidewalk, will be easy of access, as all the elevators extend up and above it. The tower at the angle of the Plaza and Fifty-ninth Street terminates with a lantern, the floor of which is 170′ above the sidewalk.

THE LUTHER MONUMENT, WASHINGTON, D. C.

THIS monument is set up in a little park in front of the Memorial Lutheran church, at intersection of Fourteenth Street with Vermont Avenue, and was unveiled on May 21, 1884. The statue is in bronze, and was cast at Lauchhammer, Germany, from the model of the colossal center figure of E. Rietschel's Luther monument at Worms. The pedestal, of solid granite blocks, is by Cluss & Schulze, of Washington, architects.

The cost of the monument was defrayed by the Luther Statue Association of New York, consisting of admirers of the great reformer.

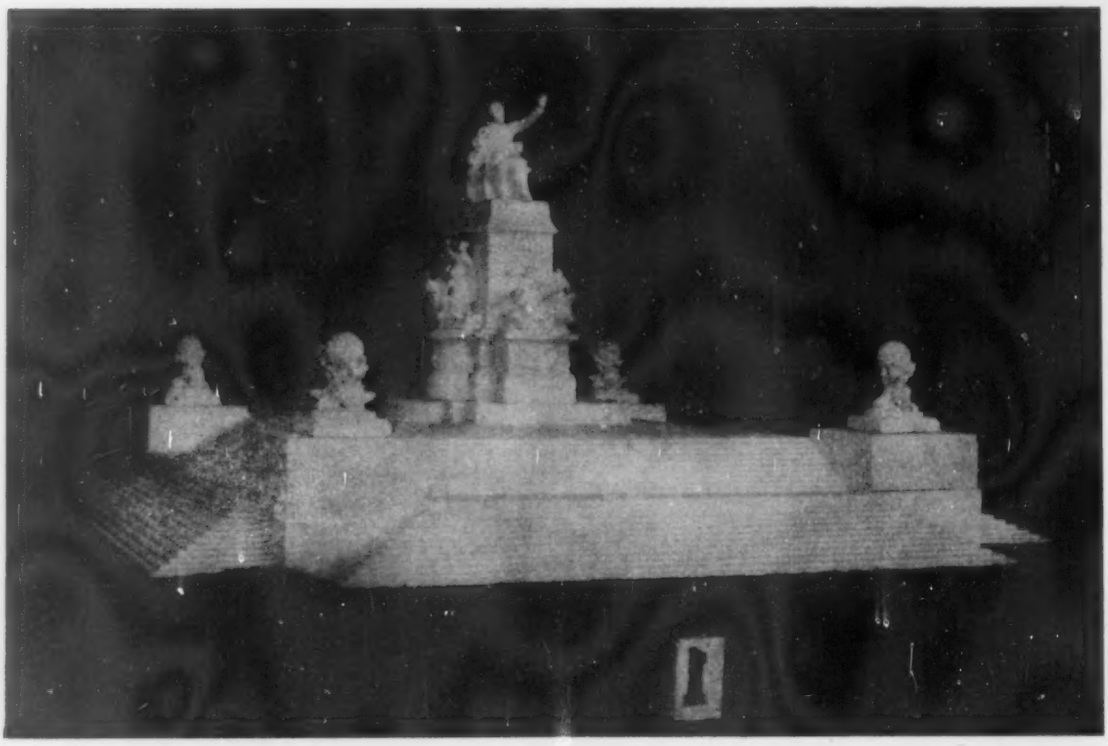
COMPETITIVE DESIGNS FOR THE GARFIELD MONUMENT, CLEVELAND, O.

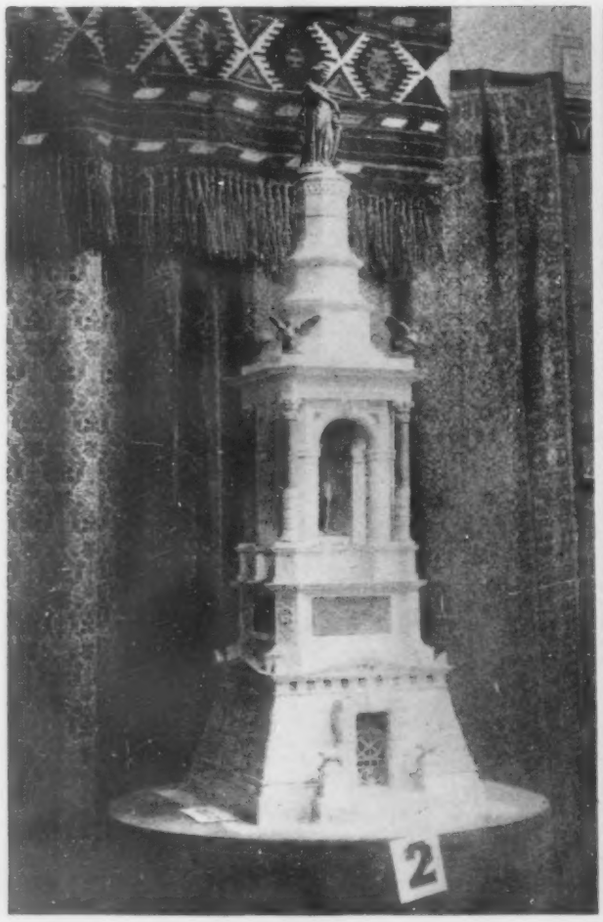
As we have seen no adequate description of the designs to which

COPYRIGHTED 1884 JAMES R. OSGOOD & CO.

The Heliotype Printing Co Tremont St Boston

COPYRIGHTED 1884 JAMES R. OSGOOD & CO.





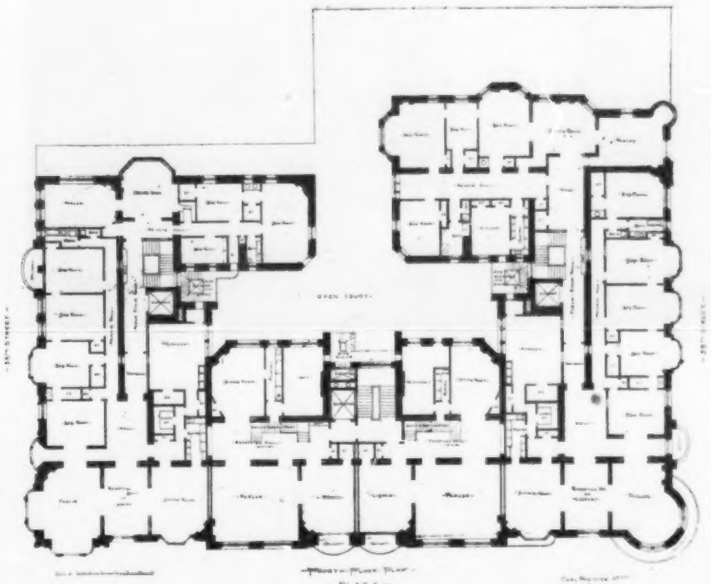
COMPETITIVE MODELS FOR THE CLEVELAND GARFIELD MONUMENT.

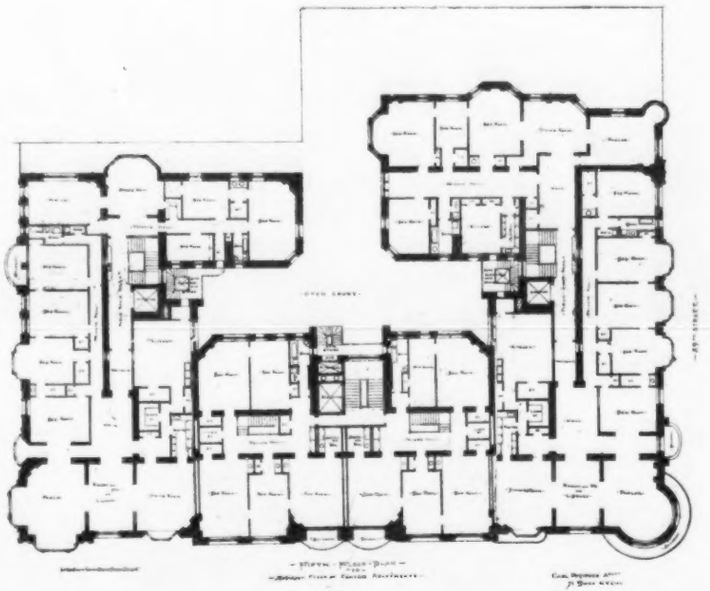
PHOTO CAUSTIC, HELIOTYPE PRINTING CO., BOSTON.

American Architect and Building News

COPYRIGHTED 1894 JAMES R. OSGOOD & CO.

The Heliotype Printing Co. Tremont St. Boston.

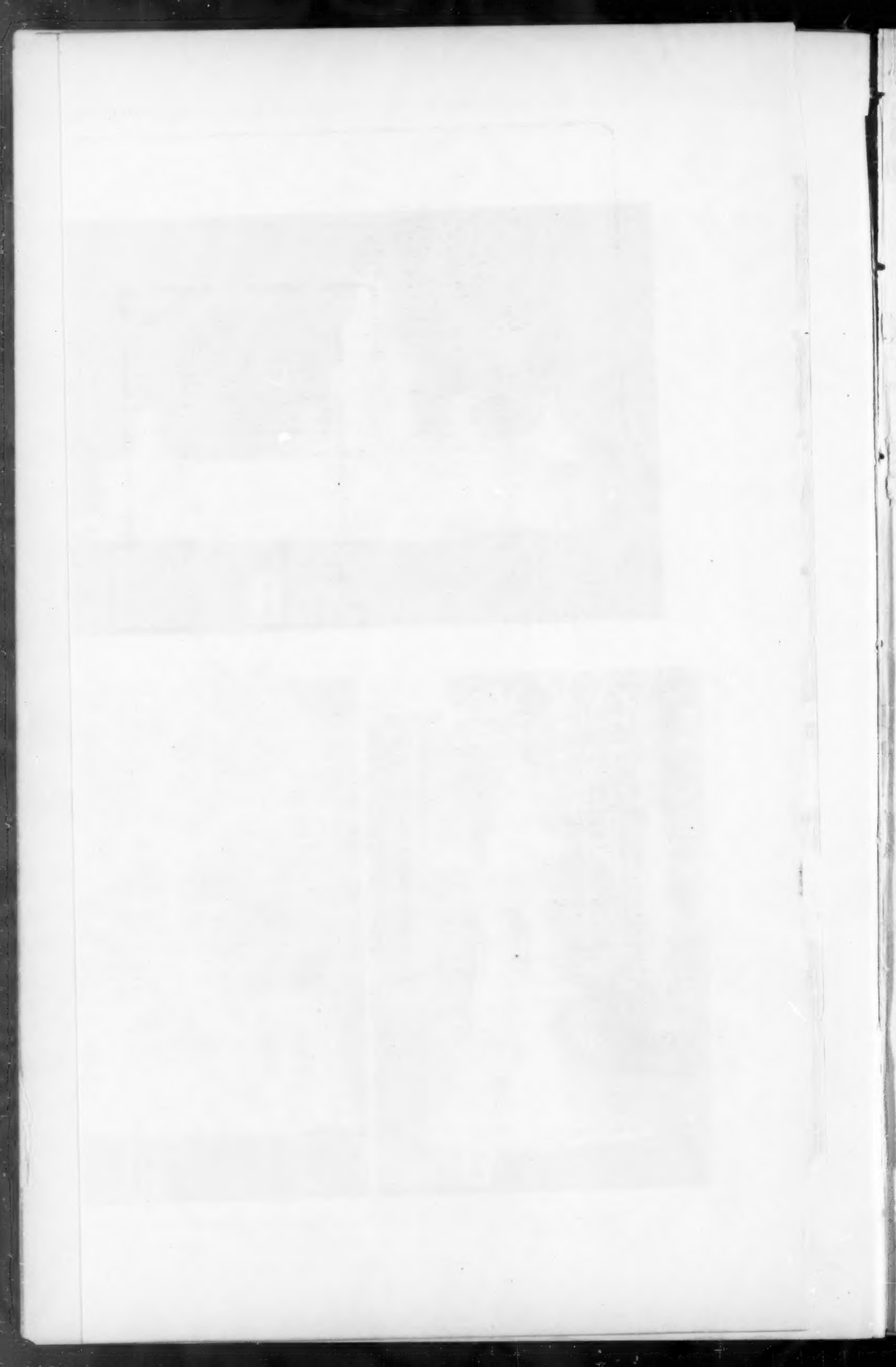




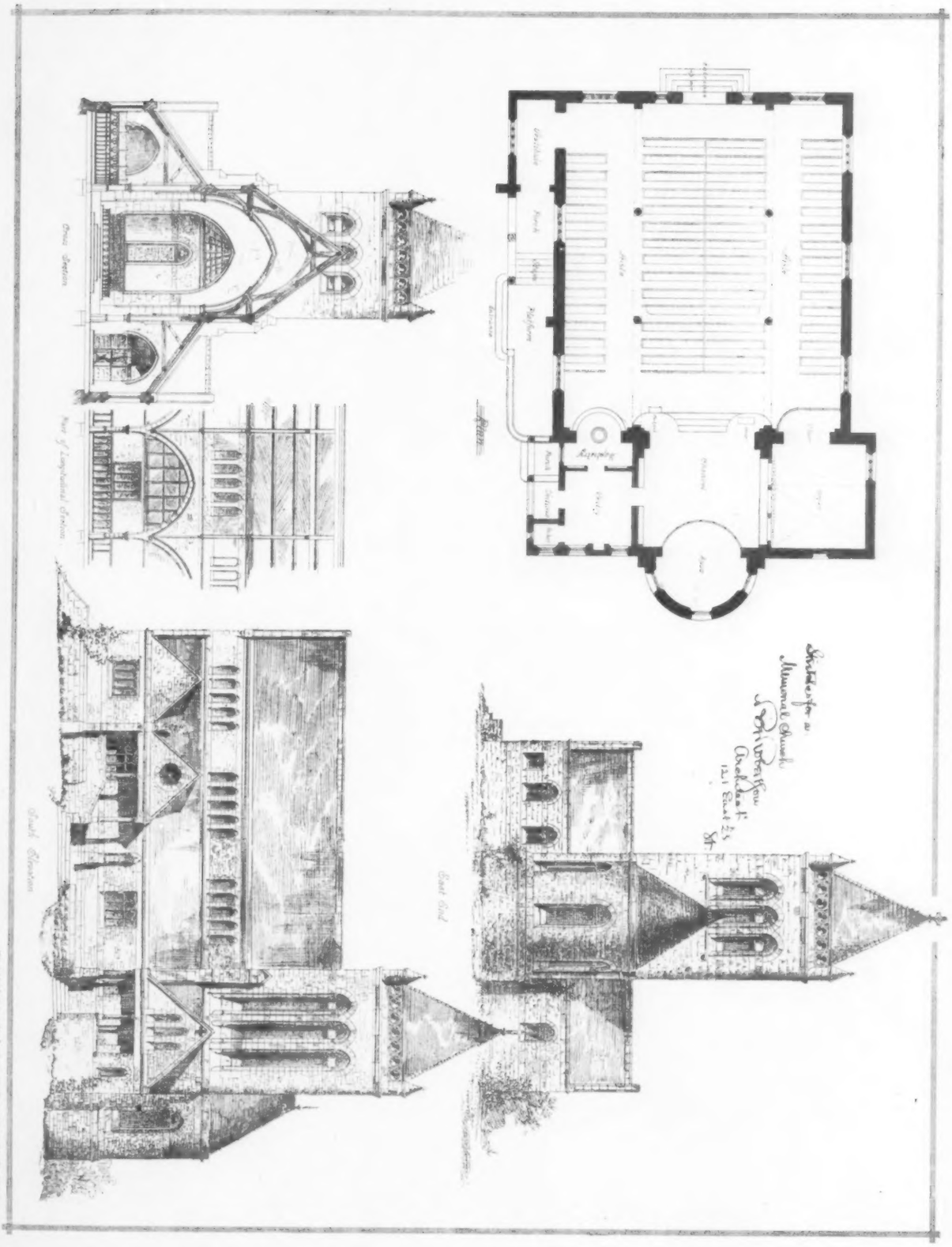
The Plaza: Apartment: House:
Fifth Ave: between 58th and 59th Streets
New York City.
Mr. Carl Pfeiffer Archt.

Messrs. Physe & Campbell: Owners:

AND BUILDING NEWS, JULY 5 1884



COPYRIGHTED 1884 JAMES R. OSGOOD & CO.


Cross Section
Part of Longitudinal Section
Plan
Auditorium
Audit
Recess
Platform
Vestry
Asst
Asst
Asst

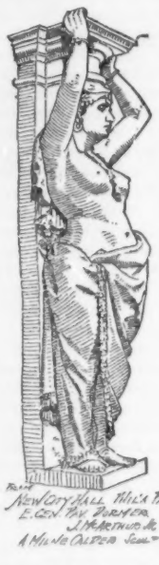
COPYRIGHTED 1884 JAMES R OSGOOD & CO

The Heliotype Printing Co. 211 Tremont St. Boston.

have been assigned the prizes in this competition — which were awarded last week — we are unable to say whether either of them is included amongst the models published to-day, or in our last issue. The first prize was awarded to Mr. George Keller, of Hartford, Conn., the second to the Messrs. Schweinfurth, of Cleveland, O., and the third to Messrs. Moffitt and Doyle, of New York.

SKETCH FOR A MEMORIAL CHURCH. MR. R. H. ROBERTSON, ARCHITECT, NEW YORK, N. Y.

STRENGTH AND WEAR OF BUILDING MATERIALS.



THE question of the rapid crumbling and disintegration of mineral building materials, is one that architects and builders throughout the entire country should be interested in.

A sample of material may respond favorably to all the known tests to determine its strength and elasticity, and still show evidence of shor life when placed in the walls or foundations of a building. Especially is this true as regards stone. To begin with, when we estimate the value of any variety of stone for any specific purpose, we must keep in mind the circumstances and conditions around and under which it is to rest, and do service:—

1st. In the average climate of America it will have to bear in the direct rays of a July sun, a heat of 120° Fahrenheit on the outside, while inside it may not be more than 70° Fahrenheit.

2d. In winter it may be exposed to an exterior temperature of 20° Fahrenheit below zero, and an interior heat of 70° Fahrenheit above zero, or 90° of difference; and though mathematics is of no aid in enabling us to determine and point out that fine point where these opposite forces of contraction and expansion meet, that we may partially provide for it in the upward and downward pressure, it amounts to the most gigantic force known, which has an effect in destroying the molecular cohesion of the particles constituting the stone. It must give to one side or the other under the enormous force applied on that side, and reversed on the other, besides the great pressure to which it is constantly subjected by the stone above, and the resistance afforded by every stone from the very foundation until it is reached.

3d. The great majority of building-stones show upon analysis traces of calcium, terrous oxides, etc. The larger number of buildings constructed of stone are located in cities and towns where coal is used for fuel, the fumes of which coming in contact with an atmosphere already impregnated with other elements, forms those acids and gases, which uniting with the elements of the stone cause disastrous results.

It is no wonder, then, that immense walls, apparently compact and homogeneous open in cracks, split off in layers, and burst in pieces.

4th. A stone newly taken from the quarry loses in weight by exposure by the evaporation of its natural moisture; this leaves all these minute interstices or pores invitingly open to rains and atmospheric moisture; hence when the frosts of our northern winters come, it is no wonder so many walls are out of line, and unsafe without repairing or renewal. This force of frost during the past winter, even in the South, puts to shame the power of a Corliss engine or hydraulic press.

The dilapidation produced by alternate freezing and thawing; the changes from protracted droughts to incessant moisture; from excessive heat to cold; the difference of temperature at the same moment between the opposite sides of the same block, the tendency to split off, and the lamination of unequal densities, and many more, are all grave obstructions to the use of building stone in this climate that would sink into comparative insignificance in other countries.

That many buildings become unsafe, and innocent persons get the blame, there is not the least doubt. A magnificent structure falls with a crash, the builder is berated, the architect censured, when if the truth was known, in many instances the silent, subtle influences mentioned above had been at work, and no one was to blame.

Before proceeding farther with our discussion, we will consider the condition of material under pressure, and subjected to tension.

If we take a piece of wood, and carefully estimate the force required to tear it asunder, we will notice that lengthwise of the grain requires the greatest force. If we subject it to pressure across the grain, for every degree we bend it we find this resistance increased 11.617 per cent (an average of thirteen varieties of wood tested), increasing in direct ratio until sufficiently bent to displace its molecules, when, of course, its strength decreases rapidly. Timbers, then, subjected to a certain tension in a building will outwear those not subjected to it. Again, a timber bearing a certain number of tons of weight for a certain length of time, will bear a much heavier weight without being unsafe, than if the timber having lain idle, as it were, should afterwards be loaded. This increase of strength is quite striking, as may be proved by the following experiment:—

Three pieces of some brittle wood, carefully made of equal size, are placed side by side, with the ends resting on some firm base, and on one is placed 100 grams, and on another 500 grams, and they are then left for a week or more in a warm, dry situation. The one bearing the greatest weight will have bent the most, and will bear more added weight than the more lightly loaded piece, while the same weight placed on number three will break it. This proves conclusively that a certain weight placed on a timber, renders it capable of bearing one still greater subsequently. A timber with all it will bear without displacement, will actually bear more additional weight subsequently, and keep on increasing in both its wrenching and tensile strength than if it is laden one-half as heavily at the outset.

Viewed with the microscope we find that the instant wood is bent out of the true the fibres become closer at the bend or angle. Now if the pressure is continued just far enough to bring these in actual contact without force sufficient to mar or bruise them, they adapt themselves to the situation, and are absolutely *glued together* by the gummy substances liberated by the cells ruptured in the bending.

Furthermore, timbers subjected to pressure will decay less rapidly then when not. A stick of lancewood bent double, and the ends made secure, and the same exposed to the influences of decomposition will show the effects much sooner in those portions not bent, than where the sharp angle appears; moreover, a stick actually broken in bending will not rot so soon at the break as at some distance from it, and fungous growths rarely appear at the point of bending as soon as elsewhere.

At first sight it would appear that, subjected to constant pressure, wood would undergo the same change as iron, but experience has demonstrated the contrary. In some of the ancient ruins of Europe we notice this fact: that those portions which apparently sustained the greatest pressure, such as roof-trusses, gables, etc., were in a much better state of preservation than the joists which were merely supports for nailing, etc. All who have visited "Duckey Hall," in Lincolnshire, will recall, perhaps, in the east wing of those massive ruins, some bits of curved cornice apparently in an excellent state of preservation, while all around has long shown evidence of advanced decay. For a long time it was supposed that this round coping was of metal, but when a few years ago this wing or tower blew down it was found to be a species of deal, which had been forcibly bent and secured while green,— probably, at the time of the building of this castle, little if anything was known of steaming,— and when these boards were released from the pressure to which they had been submitted for centuries, they began to take their original or straight form; of course, but partially; nevertheless, the ends sprang apart nearly an inch when liberated, showing conclusively, that with all the influences which had been at work destroying the adjacent woodwork, these boards subjected to this pressure had not lost their power of attempting to return to their original shape. J. F. E.

INFECTIOUS DISEASE AND FURNISHED HOUSES: A LEGAL CASE.

THIS was a case of great interest and importance to all persons taking furnished houses or apartments, as illustrating the risks of infectious disease occasionally incurred under those circumstances. The evidence was to the effect that in March, 1883, Lady Greville was desirous of taking a furnished house in town for the season, and entered into negotiations, through Mr. Elgood, a house agent in Wimpole Street, to take the plaintiff's house, No. 25 Montagu Square, the plaintiff being at that time on the point of leaving for America. After seeing the house, Lady Greville had a conversation with Mr. Elgood, in the course of which he stated that "he thought the house would suit her," and, on or about March 13 an agreement was signed by which Lady Greville agreed to take the house from March 28 to July 1 at fourteen guineas a week. On March 10 it was found that a child of the plaintiff's was ill. Dr. Sewell, who was called as a witness for the plaintiff, saw the child about half-past nine in the morning of that day, and pronounced the disease to be measles. No mention of the fact was made to Lady Greville, although it was on this very day (March 10) that Mr. Elgood wrote to her ladyship accepting her offer for the house. A day or two after the agreement was signed, Lady Greville again came to see the house, and finding the child in bed upstairs in a darkened room, according to her own evidence, asked the nurse what was the matter, adding, "nothing infectious, I hope." To this the nurse replied that it was "only a cold." Subsequently Lady Greville learned by accident that the child was ill with measles, whereupon, on March 20, she telegraphed to Elgood that, having heard that there was measles in it, she must decline to take the house. Mr. Bird himself had left for America on March 15, and nothing further passed between the parties until his return in August, when he wrote to Lady Greville, making a claim for £205 16s. as fourteen weeks' rent of the house, for which the present action was brought. The defence rested on the ground that

it was an implied condition in the contract that the house was then in a habitable condition, and that the contract was avoided by fraudulent misrepresentation on the part of the plaintiff. Counsel for the plaintiff contended that it was sufficient if the house was in a habitable condition at the date of the commencement of the tenancy — namely, March 28 — and in support of this argument medical and other evidence was given to show that after the child was removed, on March 21, the room was thoroughly cleansed and aired, the curtains and other hangings removed, and the floor washed with disinfectants, and that by these precautions all risk of infection was at an end by March 28, if not earlier. This evidence was rebutted by medical evidence for the defendant, to the effect that, unless far more extensive precautions had been taken, the room would not be safe for occupation until a month after the child left it. It was an unfortunate feature in the plaintiff's case, on which the learned judge commented very strongly, that the house had been, in fact, let for a considerable portion of the time for which rent was claimed, though no notice was given of the fact to Lord Greville or his advisers until the plaintiff's counsel, in opening his case, were obliged to admit the greater portion of the claim to be untenable for this reason.

Mr. Justice Field, in giving judgment, expressed in very strong terms his disapproval of the conduct of the plaintiff in concealing the fact that there was infectious disease in the house down to and after the time when Lady Greville saw the child ill in bed. After reviewing the facts of the case, his lordship went on to say, with respect to the questions of law involved, that that relating to the alleged fraudulent misrepresentation was unnecessary for him to decide. It was well established by several cases (which his lordship cited) that it was an implied term in a contract of letting a furnished house that the house was in a fit state for occupation at the commencement of the tenancy. It followed from this that the question for a jury would be, Do you think that the premises were, on March 28, in such a state as to be fit for habitation? The learned judge then considered the evidence bearing on this question, the result of which, he said, was that it was uncertain how long the danger of infection would last, and that being so, he could not say, after the child had been ill in the room from March 10 to March 21, that on March 28 the house was in such a state that a person could live in it without risk. His conclusion, therefore, was that the defendant was entitled to judgment.

Judgment was given for the defendant accordingly.

THE BUILDINGS OF THE LATE DUKE OF PORTLAND, AT WELBECK.

CHATEL BOURSAULT (CHATEAU DE FLEURIGNY) BOURGES.

LITTLE imaginative penetration is required to discover the reason why the traditions of the grand old forests of England are immemorially mingled with the associations of royalty. While Sherwood boasts of its Robin Hood, it can also lay claim to the patronage of King John, whose hunting palace in the woods partly exists to this day; and while the New Forest clings to its traditions of Rufus, Epping Forest remembers the royal lady who, above all preceding kings and queens, has so wisely and lovingly guided the destinies of this great nation. Around these arenas of sport we find the "stately homes of England," about which Mrs. Hemans sings so delightfully; and in Sherwood Forest especially is this the case. Its glorious leafy domain comprises the seats of the Dukes of Newcastle and Portland and the Earl of Manvers: while on the long line of contiguous forest which stretches from Mansfield to Nottingham is the beautiful ivy-adorned abbey where Lord Byron sighed and sung of his adorable Mary; and Beatwood Lodge, one of the seats of the Duke of St. Albans; with Hardwick Hall, "more glass than wall," (the seat of the Marquis of Huntington); and Bolsover Castle, the fantastic erections of the "ever-building" Elizabeth, Countess of Shrewsbury, skirting the forest as it merges into the corn-growing vales of picturesque Derbyshire. Few of the forests in this kingdom can claim to find room for palaces of such noble heritage, and in each case the ducal mansions, environed by gigantic oaks and undulating parks, are to the forefront for magnitude and beauty. Undoubtedly the oldest of the group is Welbeck Abbey, the seat of the Duke of Portland, a mansion constituting the wonder of which we wish to speak. It is the *chef d'œuvre* of human eccentricity, a palace as labyrinthine as Mount Ida, a gorgeous specimen of perverted ingenuity as perplexing as it is astonishing. Originally is was a monastery for monks of the Præmonstratensian Order, and, like all structures devoted to the "mortification of the flesh," it is situated in a goodly vale surrounded by a thickly-wooded barrier, with every forest luxury obtainable at a moment's notice. As a work of architectural art little need be said; but the proportions are ample, and what it lacks in external grace is compensated for by internal comfort. The great work of reconstructing Welbeck was undertaken by the "Invisible Prince," as the late Duke of Portland was called, and was far from complete at the time of the eccentric nobleman's death. For years he spent his princely income, amounting from land alone to upwards of £175,000 per annum, in the reconstruction of the Abbey, and enough of the work was finished at his death to make the house one of the most extraordinary buildings in the world. Five years ago Welbeck was like a "sealed book," and the fortunate visitor who had penetrated the mysterious region felt as elated as if he had discovered the Northwest Passage, and did not fail to retail his experiences on every favorable occasion. Shut up in his favorite library, the invisible Duke pursued his daily avocation of planning and plotting — planning for the construction of some ingenious marvel, or plotting to keep his magnificent mansion more completely secluded from the eyes of the vulgar world. At that time upwards of one thousand artificers were employed on the estate; so that to keep the Abbey from the rude gaze of even his own workmen required a stretch of genius which in its accomplishment has never been surpassed. Across the park the workmen were in the habit of passing to their homes at Creswell, Whitwell, and Worksop, and the occasional glances they gave at the ducal residence disturbed that feeling of seclusion which the owner desired, and consequently ingenuity was taxed, and cost disregarded, in the attempt to make the mile-and-a-half foot-path across the park as joyless as possible. Following a strange inclination for subterranean construction, the late duke hit upon the expedient of making a tunnel across the park, so that his army of workmen could pass to and fro without disturbing the serene repose which he longed for; and in the famous Welbeck Tunnel he created — what Mr. Gladstone has endorsed — one of the wonders of the world. The structure is as wonderful as it is gigantic. During the day it is lighted by enormous plate-glass bulls-eyes, superseded at night by hundreds of gas-jets. The floor is excellently asphalted, and the tunnel is high enough and wide enough for carriages to pass along. It was over this subterranean roadway that the Prince of Wales was conveyed when he honored the present Duke of Portland with a visit at the latter end of the year 1881. Nothing more effectual could have been designed for the object the eccentric nobleman had in view. Stepping into the tunnel during the hot days of summer, the traveller feels as if he had walked into an ice-house, and the whole length of its interior can be traversed without catching the slightest glimpse of the Abbey or the beautiful park under which it passes. Walking through the park, the pedestrian can trace the tunnel by means of the skylights referred to, as it passes under clumps of trees and groves of rhododendrons; and the same idea of burrowing is carried out in the well-appointed lodges scattered over the huge domain.

Under and about the Abbey, however, the Duke displayed the most brilliant capacity for subterranean construction. The private tunnels and underground apartments attached to the Abbey are indescribable specimens of costly thought and princely effort, and afford the most astonishing indication of the eccentricity which marked the career of the late Duke of Portland. In these labyrinths the noble owner could pass from one building to another in all sorts of weather, and appear at any moment at a required spot without giving warning of his approach. The perfectly constructed passages lead to an underground suite of rooms of extraordinary magnificence. Upwards of £20,000 to £30,000 were spent in draining and preparing the ground for this palace of Aladdin, and the work was carried out with a total disregard of the cost. A subterranean ball-room, 166 feet long, forms part of the number, and for festive delight it would be difficult to imagine a more perfect apartment. The walls are hung with mirrors of great value, with beautifully adorned alcoves wherein the "whirlers" can retire and seek seclusion from the arena of gaiety. The decoration is artistically pleasing, and the visitors can roam about from one underground conservatory to another, or be "lifted" without effort to the upper air. The doors are of enormous weight and size, and, like the famous Chatsworth "garden gate," are so perfectly hung that they respond to the lightest touch, and close with a precision accurate and astonishing. Through these subterranean apartments the visitor can roam until wonderment becomes entirely satiated; passing through a magnificent library into a spacious billiard-chamber, with reception-rooms and writing-rooms in proximity to these superb *salons* of delight. In every detail the most refined taste has been displayed, and the furniture compares favorably with the elegance of the decorations. The absence of fireplaces is a notable feature, the underground palace being warmed without visible flame or annoying draught.

Passing along one of the underground passages which honeycomb the foundations of the Abbey, the visitor reaches the handsome structure which is generally known as the Duke of Newcastle's riding-school. This Duke of Newcastle, a staunch Royalist during the Parliamentary struggles, lived to be richly rewarded for his loyalty to the Stuarts, and built a considerable portion of Welbeck, including the riding-school referred to. He was esteemed a cavalier *sans peur et sans reproche*, and produced a treatise on horsemanship which was considered a valuable addition to the equine knowledge of that time. The marriage of his granddaughter gave Welbeck to John Holles, Earl of Clare, subsequently created Duke of Newcastle. The only daughter of this nobleman was given in marriage to the second Earl of Oxford and Mortimer, whose only daughter married the second Duke of Portland, and brought the Welbeck estates to the already

opulent Bentincks. The riding-school, with which the Cavendish Duke of Newcastle was associated, was not constructed on strict lines of architectural beauty, and was afterwards converted into a picture-gallery 182 feet long and well-proportioned. The four great glass chandeliers in this vast apartment, each weighing a ton, are perhaps the most noteworthy features, and it was in this awe-striking room that the last Duke of Portland piled his magnificent collection of paintings, the works of the most celebrated masters of the Flemish and Italian schools, against the wainscotting, to mildew and rot in their undignified oblivion. Beneath the oaken floor immense wine cellars were constructed, with cast-iron bins, and subterranean passages to connect the cellars with the principal rooms, and an underground railway to complete the display of ingenuity and eccentricity which everywhere abounds.

Another underground excursion through one of the most "inviting" tunnels, if such dark passages can be so termed, ends at the new riding-school, built by the "invisible nobleman" to supersede the one just described. Externally the edifice presents the appearance of a gigantic public hall, and is of massive and portentous aspect. Undoubtedly the building is the finest riding-school in the world, and an internal view is absolutely startling. A perfect forest of columns serves to support the finely arched roof, and the bewildered spectator would immediately come to the conclusion that he had been suddenly transported into a large railway station, if it were not for the artistic features which prevail throughout the interior. The roof is of glass and highly ornamented iron, with cornices beautifully decorated with foliage and fantastic groups of birds and beasts. The school is 379 feet in length by 106 feet in width, and 50 feet in height, so that some idea may be gained of its enormous capacity; and some fifty horses can easily be exercised within its area. Upwards of 8,000 gas jets are employed to illuminate the building, and when so illuminated a sight is presented which is truly marvellous. A little farther on are the stables, coach-houses, etc., and the covered "gallop" of 1,000 feet long — another of the wonders of Welbeck. Around these buildings are picturesque dwellings, forming a little village, and chiefly occupied by stablemen and others. The houses are models of elegance and comfort, and as much care has been bestowed in their construction as in any of the marvels which are everywhere present in the vast domain. Not less remarkable are the extensive kennels, the cow-yards, cow-houses and dairies, while the gardens of Welbeck, stretching down to the edge of the lake, with a peach wall a thousand feet long, and an avenue of fruit-trees of similar length, are features which no visitor would care to pass unnoticed.

The lake, which extends for a distance of four miles through the picturesque park, may be mentioned as affording an instance of the prodigality of labor and expense in the beautifying of the Norbertine monastery and its surroundings. Near the old portion of the Abbey, the lake dwindles to the proportions of a river, and an admirable asphalt skating-rink is constructed on one of its banks. The rink is about half a mile long and twenty feet wide, and during the lifetime of the "Prince" of Welbeck this pleasure resort was frequented only by the servants connected with the Abbey. In the centre for the rink is a model boat-house of rustic wood-work, with stores of skates, and rooms for dressing and refreshment.

Since the death of the eccentric nobleman, which took place a few years ago, to whose ingenuity and skill these marvellous achievements are mainly due, and the advent of the present Duke of Portland, a young man now about twenty-five years of age, and at the time of succeeding to the inheritance holding an important commission in the army, the palace of Welbeck has not been so effectually obscured from the eyes of the public. With a generosity which has earned its reward, the young Duke threw open the barred gates, and allowed the public to inspect a domain which for years had been invisible. The princes of the blood royal, and the scions of noble houses, who had stood at the gate like the Peri at the gate of Paradise, claiming impossible admission, were quickly invited to inspect the wonders of the place, and many availed themselves of the noble owner's proffered hospitality. The reception accorded to the Prince of Wales when he visited the Abbey was brilliant and imposing, and the Welbeck welkin rang with shouts of festivity such as had not been experienced for years before. The fine park was thrown open, and the public walked at will through the beautiful grounds, entering the hitherto sacred place with a wondering and astonished gaze.

The Abbey is associated with many traditions of festive splendor, and another era of hospitality seems to have dawned. In 1732, the owner of Welbeck appears to have been indiscriminate in his hospitality, for about that period, on one of the roads near the Abbey, was placed this curious notice: —

> "Whoso is hungry and liste to eate,
> Let him come to Welbeck to his meate;
> And for a night and for a day
> His horse shall have both corn and hay;
> And no man shall ask him when he goeth way."

In 1619 James I, while the guest of Sir William Cavendish, was entertained there with great magnificence; and in 1633 the festivities in honor of the visit of Charles I were so enticing that His Majesty came again to the Abbey in 1634, when there was "such excessive feasting as had scarcely ever been known in England." Charles, accompanied by the Queen, marvelled at the ardor of the reception and the generosity of the host. "The Earl," says one historian, "sent for all the gentry of the country to wait upon their Majesties, and so liberal was he in his efforts to please his royal guests that £15,000 did not cover the expenditure."

Following upon the visit of the Prince of Wales, a visit enjoyable to both guest and host, the Duke of Portland invited to his park the Honorable Artillery Company, with which he had been connected for some time in an honorary capacity, and for ten days the officers and men were encamped under the shadow of the Abbey, partaking of a right royal hospitality, and enjoying what was nothing less than a huge picnic in a huge park. The sham fights which were organized attracted thousands to the spot, and the Bank Holliday of 1882 was certainly unlike any corresponding period in the history of Welbeck. Quietness supervened, and up to the present time no extraordinary carousal has awakened the echoes of the forest, and the inhabitants of the Abbey are enjoying somewhat of that serene repose which marked their life during the career of the late Duke of Portland.

N. Hartley Aspden, in *Forestry*.

BRONZE CASTING.[1]

THE art of casting in bronze became naturalized in France under Francis I, who invited Benvenuto Cellini and other Italian artists to establish themselves in France, and built several foundries, the principal one being that of Fontainebleau. The manufacture of bronze was not, however, firmly established in France till 1684, when the Arsenal Foundry was built by Louvois, and placed under the direction of the brothers Keller.

The colossal equestrian statue of Louis Quatorze by Girardon was cast by the brothers Keller; it was intended originally to be placed on the Place Vendôme, then Place Louis le Grand, but was broken up at the first Revolution; one foot of the horse is, however, preserved in the Louvre as a specimen of the excellence of the bronze, the beauty of the work, and the colossal proportions of the statue, which was 7 metres (about 26′) high, and was cast *à la cire perdue* at a single jet. The three legs of the horse, supporting the principal weight of the statue, were made of solid wax without a core, and consequently when cast became solid bronze, while the rest of the statue was only 16 millimetres (five-eighths of an inch) thick. The weight of bronze required in this process is calculated at ten times that of the wax employed, and in this statue 3,000 kilograms of wax and 30 tons of bronze were used in the casting. The brothers Keller were the last founders of renown in France; after them the art of casting in bronze by the wax process declined, and at the beginning of the present century all practical knowledge of it was lost.

The sculptor Falconet, who was a contemporary of the Kellers, became a bronze-founder from necessity; not having been able to find at St. Petersburg a bronze-founder who would undertake to cast his statue of Peter the Great, after waiting for more than two years, he acceded to the repeated request of the Empress, Catherine II, and cast it himself *en cire perdue*. At the first attempt the mould burst before it was filled, and the whole of the upper part of the statue was defective. The second casting was successful, with the exception of some cracks and holes, which were filled up with molten bronze so effectually that it was impossible to tell where the statue had been repaired.

Although Falconet does not describe at length the manner in which he cast his statue, he mentions incidentally that he employed the wax process since he relates that the bronze-founder Ersman, one of those to whom he had applied, declared that Falconet must be mad to attempt to cast a statue of that size with wax only three lines (a quarter of an inch) thick, that such a thing had never been done before, and that if he persevered in attempting it the casting would inevitably fail. Falconet remarks that in casting this statue twice he had learned two things: first, that the modern art of casting colossal statues was imperfect, and, secondly, that it might be rendered perfect if sculptors and founders chose to take the trouble.

The bronze castings made under the First Empire were from moulds made on plaster models by an ingenious method known by the name of *moulage à la Française*, which is now employed in all French bronze foundries. It has the advantage of being economical, especially for large works, and is generally used in all the foundries of the north of Europe; it resembles in some respects the system practised in iron foundries, and is now employed even in Italy in preference to the wax process.

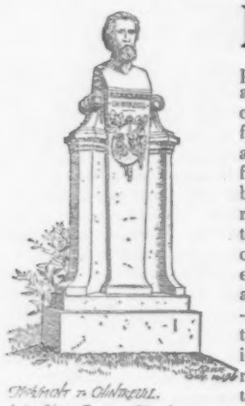
It must also be remarked that casting *en cire perdue* is not suitable for every style of sculpture. Works, for instance, requiring a smooth surface can, and indeed ought to be, cast by the ordinary French system, which produces metal of a closer grain and more polished surface, requiring, however, the use of the chasing-tool over the whole surface to efface the marks left by the joints of the piece-mould, and the entire removal of what is called *la peau de la fonte*, the casting skin or "epidermis" of the bronze as it comes from the mould, and which, in the wax process, constitutes its peculiar charm,

[1] From the Official Report by Sir J. Savile Lumley.

reproducing as it does a perfect fac-simile of the original work as it left the artist's hands.

The ordinary method of casting is more suitable to the bronze articles of commerce which require frequent reproduction, as well as for bronzes intended to be gilt or silvered and burnished. The wax process, on the contrary, is adapted to unique artistic works not intended for reproduction; the casting skin, however, so dear to the sculptor, diminishes to a certain extent the beauty of the artificial "patina," or bronzing, which is always more brilliant on bronzes that have been worked over with the file and the graving-tool. Although casting in bronze by the wax process was given up in France at the beginning of the present century, it has never been lost sight of altogether in Italy, from whence occasionally specimens have been sent to the annual Exhibition of the Fine Arts at Paris.

CONCRETE FLOORS AND PAVINGS.[1]—III.



PERHAPS there is no other industry that has developed into a permanent business in a less time, or with equal probabilities of maintaining a position as a staple manufacture, than that of concrete paving. Under various names, fanciful and otherwise, yet to all intents and purposes concrete in its simplest form, many descriptions of paving have been brought into notice, and as a natural sequence those which have stood the test of hard wear and tear without a serious depreciation, have obtained the greatest amount of public support. Foremost amongst these stands "Victoria Stone"—manufactured at Stratford in Essex, the aggregate for which consists of granite, chiefly from the Leicestershire quarries, and the matrix Portland cement of the best quality, the admixture of the two it is almost unnecessary to state being executed with the greatest care. A feature however, in connection with this paving is, that after being taken out of the moulds it is placed in a bath of silicate of soda; the silica, or flinty material is obtained from Farnham in Surrey, and is converted into a silicate by the addition of caustic soda. It is claimed that this treatment not only hastens the hardening of the slabs, but renders them more capable of withstanding heavy wear. This latter qualification has been doubted, but whether or no, we have palpable evidence from the large quantity used in the streets of London, that Victoria Stone is extremely durable. As with all granite concrete pavings, it must be confessed that it does not give that feeling of security in walking thereon which is experienced with York and other sandstone pavings; on the other hand, we do not hear or read of it being the primary cause of accidents from any smoothness of surface. The granite aggregate was formerly employed of a much larger size than at present, as may be noticed in the different textures of paving laid down in some parts of London a few years ago, and that which is used at the present time. The paving made with the smaller aggregate has a better appearance, gives apparently a safer foothold, and must undoubtedly prove more serviceable. The slabs are made of various sizes, and generally about 2 inches thick, and weigh about 26 lbs. to the superficial foot. The crushing weight of Victoria Stone is ascertained to be 6,441 lbs. per cubic inch, as against, 5,851 required to crush York landings. An advantage claimed for this as well as most other concrete pavings is, that it is of an uniform texture throughout, and not only wears of an even grain and is free of lamination, but that it can be turned over and relaid when the original surface is worn uneven.

The Imperial Stone Company,—originally Messrs. Hodges and Butler—whose works are at East Greenwich, and whose manufactures include many other items besides paving, also produce a superior description of slab, and as the Company makes drain-pipes and other articles, it does not confine itself to the use of any special aggregate, as it is obvious that what is suitable for one purpose may not be so well adapted for another. Granite however, is one of the principal materials, and Kentish rag-stone another. It is claimed for the latter that it is a suitable aggregate for concrete exposed to a higher temperature than usual, such as pavings for conservatories and buildings where hot water-pipes are used. In filling concrete moulds for pavings, one of the main points to be attained is to leave no vacancies, but to so arrange the materials that they shall form a dense mass, otherwise as the stone face wears, the surface, as was previously explained, appears pitted. It is well known that to pack a quantity of small loose materials of any description into the least possible compass, the best means to accomplish that object is to well shake the vessel containing them, and the Imperial Company apply this principle by placing the moulds upon what are called "tremblers," which impart a vibratory motion to the frames, and enable each particle of the concrete constituents to interlock with each other in a way which no other method could produce so well. By making the concrete very soft it would help it in this respect, but with the disadvantages of retarding its setting qualities, and possibly of causing the superabundant water to deposit a portion of the cement at the bottom of the moulds. Practically the smaller amount of water employed, the better, provided sufficient is used to convert the cement into a soft paste, and means are adopted of fitting the materials into the least possible space. To effect this object simple compression has apparently not the desired effect, for the aggregates appear to require moving till their proper position or place of rest is ascertained, and the trembler, no doubt, accomplishes this very successfully. Tamping, or a gentle impingement with light beaters, would in the absence of tremblers assist materially to force the particles into place, but always imperfectly. The "Imperial Stone Company" adopt the system practised by the Victoria Company, of placing their pavings in a bath of silicate of soda, and they state that specimens of their materials have been tested by Mr. Kirkcaldy, and found to withstand the enormous crushing force of 8,075 lbs. per square inch, and as tested by Mr. Faija a tensile strain of 792 lbs. per square inch.

The "Eureka Company," or Wilkes Metallic Flooring Company, have for some years past also done an extensive business, principally in monolithic floors and pavings. The surveyor of Marylebone, in January of the present year, testified to the fact that a considerable amount of paving executed in that parish, and forming the footways of a portion of Oxford St., therefore subjected to very heavy traffic, showed no appreciable signs of wear after four years' incessant traffic. For the North Metropolitan and the North London Tramways Companies also it has been extensively used for stable pavings, and the manager of the latter Company affirms that it is proof against the absorption of urine. As this is one of the most important factors in connection with maintaining the healthy condition of horses, its value in that direction cannot be over-estimated, for no description of bricks can be said to positively fulfil this desideratum, and no matter what the jointing material may be made of, the pounding to which stable floors are subjected, must sooner or later disturb paving composed of an infinite numbers of small portions.

Wilkinson's granite concrete flags and monolithic pavings have an established reputation, and the fact that Messrs. Wilkinson & Co., have laid 8,000,000 superficial feet during the last ten years is sufficient evidence in itself of the high character in which their paving is held. The works are at Newcastle-upon-Tyne, where the aggregate is prepared ready for use, and despatched wherever required; this concrete has found especial favor for stable paving, and has been extensively used for the cavalry stables at Aldershot, Curragh Camp, and other military depots; for this purpose it is laid down in a soft state, and whilst in that condition grooved to various patterns as may be desired. Messrs. Wilkinson & Co., offer to guarantee the work executed by them for five years, and this should be sufficient to convince the most sceptical unbelievers in concrete pavements, that the latter is not one of the many inventions which are loudly proclaimed as being superior to anything and everything hitherto produced, are tried, found wanting, and sink into oblivion.

There are of course other manufacturers of floors and pavings besides those named, but whose productions are not of such magnitude, or have not yet undergone the test of time. That concrete floors and paving will come more into general use, cannot for one moment be doubted. Every large conflagration is a factor in promoting the extended use of the former, and all that is needed to make the latter better known and appreciated, is to give it a position where it can be fairly compared with the sloppy and uneven pavements of many towns, and where both can be subjected to the severest test.

The eventual use of concrete on an extensive scale for an endless variety of purposes is undoubted, and although in some instances there have been failures, which may be readily accounted for, yet where its treatment is properly understood, and its application made the study of practical minds, the result will be always the same, as evidenced in the magnitude of the business done by specialists in concrete floors and pavings, and in the acknowledged superiority of the latter over any other systems with which we are acquainted.—*The Building World.*

[1] Concluded from page 273, No. 441.

THE EFFLORESCENCE ON BRICKWORK.

Boston, June 28, 1884.

To the Editors of the American Architect:—

Dear Sirs,—I find, in your number for the 28th inst., that Mr. Babcock offers further explanation on this subject. I will say that, to me at least, he made himself perfectly clear at the start, and was not misunderstood. My only suggestion was, that acid acting on soda, and releasing the carbon produced a chemical change, etc. I said "neutralize or *practically* destroy the soda." I do not think "muriatic acid will decompose sulphate of anything," and the question is yet open, as regards the *sulphate*. According to Mr. Babcock, it is produced by burning the sulphur existing in the coal-dust. As will be seen, *coal-dust* is an important auxiliary, and unfortunately for his theory it is generally, or, to say the least, often not used, and in cases where the whiteness as freely occurs.

While we are agreed that the cause is soda, and that the method of treatment, "to a coat of linseed-oil, is an excellent one," yet I am disappointed that he ignores the point I made: that the whiteness appears equally on bricks burned with wood, and where, in the manufacture; no coal-dust is used; and that from time immemorial bricks have thus appeared white. They were so seen in Boston a

century before coal was used, or hardly known as a fuel by its inhabitants. I assume that, even now, the use of coal-dust in the manufacture of bricks is simply local, and an exception to the rule, and in most country places it probably never will be used; yet in special examples of bricks made thus the whiteness appears all the same.

It is a pleasure to be able to agree in the fact that soda in one of its forms is the cause, and that, if you please, simple water dissolves it; and, next, that "linseed-oil as a coating is an excellent treatment." I will, however, add that best success has been attained where dilute muriatic acid has cleansed the pores in the bricks, and thus permitted the oil to farther penetrate; and while speaking of this I will reply to your other correspondent who speaks of the use of kerosene-oil. This material penetrates the brick to a depth of about a half-inch, where they are of an average hardness, and dissolves the soda, but the oil, lacking the body that linseed-oil has, affords much less protection from the atmosphere, and has proved to be of only temporary value. HENRY S. MCKAY.

NOTES AND CLIPPINGS.

NO MONUMENT TO VICTOR EMMANUEL IN THE PANTHEON. — The project of erecting a monument to King Victor Emmanuel in the Pantheon has been abandoned. A simple tablet will take the place of the proposed monument. A conflict with the Vatican will thus be avoided. The anti-clericals denounce this step as a weak concession to the church.

THE PRIX DUC.— In the competition for the Duc Architectural Prize, worth 4,000 francs, only three sets of plans were sent in, one by M. Armand, of a residential villa; another by Albert Ballu, of the new Law Courts, to be erected at Cherbourg; and a third by M. Vandozer, for a bridge of fine arts. The architectural section of the Academy has decided to divide the prize equally between the two last-named competitors. The plans were on view to the public from Friday to Monday last in the Caen Museum at the Institute.— *The Architect.*

A THEORY OF THE SELF-PURIFICATION OF RIVERS.— A discovery has been made by Dr. Pehl, of St. Petersburg, which promises to have a very important bearing on many industrial processes. The water of the River Neva is very free from bacteria, having only about 300 germs in a cubic centimetre. The canals of St. Petersburg, on the contrary, are infected with bacteria, their number reaching 110,000 in a cubic centimetre, even during good weather. The same is true with regard to the conduits of water for the supply of the city. While the chemical composition of the water passing through these city conduits hardly differs from that of the Neva (by which they are supplied), the number of bacteria reaches 70,000 against 300 in the water freely taken from the river; and the worst water was found in the chief conduit, although all details of its construction are the same as in the secondary conduits. Dr. Pehl explains this anomaly by the rapidity of the motion of the water, and he has made direct experiments in order to ascertain that. In fact when water was brought into rapid motion for an hour, by means of the centrifugal-machine, the number of developing germs was reduced by 90 per cent. Further experiments will show if this destruction of germs is due to the motion of the mass of water or to molecular motion. If this discovery of Dr. Pehl's be confirmed it will become possible to destroy bacteria, and render a water comparatively pure simply by passing it through a centrifugal-machine. The subject is of special interest to brewers who suffer, perhaps, more than any other manufacturers from the attacks of bacteria.— *Exchange.*

THE NEWBURG WASHINGTON MONUMENT.— Apropos of this monument, the New York *Times* offers these judicious reflections and suggestions:—"In matters of art no half-way course is possible. A monument to Washington, particularly, must be "big," in the best sense of the word as it is used by artists. This does not exclude actual bigness in size. On the contrary, such a monument might be "big" artistically and big in size also. But if it is not that, then its bigness should consist in its beauty, without relation to size, as some of Barye's little animals or some of Cellini's little bronzes are more tremendous than the colossal St. Charles Borroméo on Lago Maggiore, or the Germania on the Rhine. The sum of money at the disposal of the Trustees is quite large enough, if the latter will avoid anything that savors of mediocrity. Let them decide to have one extreme or the other — a gigantic rude piece of art or a small fine piece. If they choose the former, they have various courses before them. They may intrust to a sculptor of proved strength the finding of a conspicuous mountain top or cliff, visible for great distances up and down the river, near the Highlands, and direct him to fashion it rudely, by blasting, into a profile of Washington. This would require the highest genius to do well. Or, it might be a sheer cliff like that of Crow-nest into which a field might be sunk, bearing in high relief, cut in the live rock, some appropriate monument visible at a great distance. There is great scope for gigantic art of this kind in and near the Highlands of the Hudson, and others besides M. Bartholdi may be found to possess ability in it. For the timid who must have precedents for everything, the rock sculptures of Asia Minor, and, indeed, of Europe, not to speak of the aboriginal sculptures on our own continent, will prove reassuring. But if the Trustees choose the other alternative and demand the much art in the little space, there are the walls of the Headquarters which ask nothing better than to be adorned by reliefs, in marble, bronze, or whatever material is thought fittest. There is less risk of failure here because bas-reliefs when kept under cover and shown by the light of windows, are comparatively understood, while the gigantic in art is necessarily less familiar because resorted to more rarely. Either of these extremes promises the chance of a monument worthy of the man and the place. Anything that savors of compromise will be sure to prove one more product of American cemetery art."

THE NEW PARLIAMENT-HOUSE, BERLIN.—The laying of the foundation-stone of the Reichstag Building, June 10th, the symbolic corner-stone of German unity, was the greatest and most imposing public ceremony performed by the Kaiser since the completion of Cologne Cathedral and the unveiling of the National Monument at Ruedesheim. Herr Paul Wallott, who was not only the designer of the plans which received the first prize at the public competition, but who has also been appointed Supervising Government Architect during the erection of the building, has kindly furnished me with the following official details regarding the projected edifice: "The building will form a great square, with a frontage of 446 feet on the two greater sides, facing west and east respectively, by 312 feet on the shorter fronts. It will enclose two interior courts, measuring 52 by 98 feet, placed symmetrically to the central axis of the building. The outside façades of the edifice will be 85 feet in height, being flanked by four square towers which rise at each corner to 131 feet. The central part on the western front with the grand entrance, is designed to be 105 feet high, and will be surmounted by a huge octagonal cupola, the apex of which will stand 230 feet above the ground. This cupola will cover the central hall, 69 feet square; which, with two galleries added on either side, 46 feet high will form a great hall with a total length of 295 feet, to be used as members' lobby, and for great ceremonies and festivities. The session hall for the Reichstag will cover an area of 6,560 square feet. It will be 43 feet in height, and like the great hall receives the light from above. Besides the seats and desks for the 399 members, it will contain the places for the members of the Ministry and the Federal Council, with galleries for the Court, the diplomatic corps, the press, and the general public. The entire building will be placed on vaulted cellars and comprises four floors, on which all rooms necessary to a great Parliamentary building are to be distributed in the most practicable manner, including the offices for the Presidents and Secretaries, and those for the Federal Council, the library and large reading-room, the archives and record rooms, the different offices of the House, the stenographic and press-room, the telegraph and post-offices, committee-rooms, restaurants, ante-chambers and parlors, wardrobes, toilet-rooms, &c. The internal arrangements will naturally include the latest scientific improvements in electric-lighting, telephonic communication between all parts of the building, hydraulic lifts, heating and ventilation. It is intended to employ none but German material in the erection of the entire edifice. The total cost, exclusive of internal fitting and decorations, is estimated at 18,000,000 marks, (£900,000.)" The building of the edifice is estimated to be completed in from six to eight years, and the German nation has no wish more fervent than that the venerable monarch may be present at the opening of the edifice in the same vigor and good health as he displayed at to-day's great historical ceremony.— *London Daily News.*

A DANGER FROM NATURAL GAS.— The New York *Tribune* says that a few weeks ago a hostler entered one of Carnegie Brothers' Stables at Pittsburgh, Pa., with a lighted candle in his hand. An explosion followed. The man was blown thirty feet, a horse worth $1,300 was instantly killed, and the stable was completely wrecked. An investigation proved that it was an explosion of natural gas, which had escaped from a pipe a few feet away and had gradually forced its way through "made ground" until it entered the stable. Being invisible and odorless, the danger is doubled. So far no method of making known the presence of natural gas has been discovered. Like Carnegie's stables, nearly all the manufactories along the river-front are erected on made ground. A well-known manufacturer, who carries $250,000 of insurance, said to-day: "Unless some safer method of transportation is invented, we will literally be living on the top of a slumbering volcano."

One corporation has applied to the City Councils for the exclusive right to transport the natural gas through the streets of Pittsburgh. If the Councils act favorably on their proposition, they will at once begin the laying of a double pipe, one of eight inches in diameter within another of twelve. The inner pipe will convey gas to manufacturers, while the outer which will hold the leakage from the inner, and at a less pressure, will transport sufficient for the private consumers. This is the safest method yet suggested. Some opposition to the scheme has been developed, but it is expected that when the New York underwriters have their say, the measure will be made a law by the councils. One New York insurance man who was in the city for a few minutes to-day said: "Unless your people quit carrying this new gas in common pipes, we will be compelled to do one of two things — raise the rates of insurance or cancel the policies." The companies who are using the common pipe are proceeding under a general State law passed in 1874. In Kittanning and several towns in the lower oil country, insurance companies positively refuse to take risks at any figure so long as the present method of transporting natural gas is in vogue.

ONE RESULT OF THE SMOKE NUISANCE. — AN OBSERVATORY ALMOST USELESS. — Prof. S. P. Langley, Director of the Western University Observatory, states that the usefulness of the observatory is seriously threatened by the smoke which invades the sky from all quarters, and the increasing haze from moisture in the atmosphere, which the smoke seems to enhance. In five months there has not been one day sufficiently clear for delicate observations. Unless this state of affairs is done away with by the introduction of natural gas or otherwise, Prof. Langley states that the days of the observatory for scientific purposes are numbered. — *Pittsburgh Telegraph.*

THE CORINTH CANAL.—The New York *Evening Post* says that the Isthmus of Corinth Canal, a scheme which was promoted originally so long ago as the time of the Emperor Nero, is now almost an accomplished fact. The dredging operations at the approaches to the canal proceed very rapidly, for about 5,000 cubic metres of soil and sand are removed every twenty-four hours. There are large numbers of workmen employed also on the central portions of the channel, and they have the help of a railway for the conveyance of material. A new town, called Isthmia, has sprung into being, and it contains some 200 houses and stores.

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

300,771. Bit-Stock. — John S. Fray, Bridgeport, Conn.

300,773. Lock. — James Gwynn, Detroit, Mich.

300,776. Window-Screen. — George W. Henry, West Jersey, Ill.

300,780. Bench-Dog. — Chas. C. Johnson, Springfield, Vt.

300,790. Hydraulic Cement. — John Murphy, Columbus, O.

300,797. Fire-Escape. — Jas. Edward Post, Poughkeepsie, N. Y.

300,822. Fire-Escape. — James B. Wiltshire, Cincinnati, O.

300,843. Fire-Escape. — Jesse H. Burks, Los Angelos, Cal.

300,844. Weather-Strip. — Jacques Couturier, Lyons, France.

300,857. Fire-Escape. — Lewis J. Evans, New York, N. Y.

300,861. Construction of Buildings. — Edwin Gilbert, Georgetown, Conn.

300,870. Drain-Cleaner. — George Washington, Immel, Logansport, Ind.

300,881. Window-Screen. — Egbert E. Masters, Sacramento, Cal.

300,882. Drain-Tile Machine. — Calvin J. Merrill, Des Moines, Io.

300,898. Pipe-Cutter. — Edwin A. Robbins, Boston, Mass.

300,901. Die-Stock and Die. — Nelson Sawyer, Hartford, Conn.

300,902. Fire-Escape. — John G. Schiller, Youngstown, O.

300,905. Water-Closet. — James Semple, Cincinnati, O.

300,917. Hydraulic Cushion for Water-Pipes. — John Story, Cincinnati, O.

300,932. Elevator-Guard. — Henry C. Wilcox, Boston, Mass.

300,939. Weather-Strip. — William D. Bennett, Bedford, Io.

300,946. Pulp-Board for Roofing Purposes. — Philip Carey, Cincinnati, O.

300,954. Sash-Holder. — Edwin B. Clement, Marshalltown, Io.

300,961. Screw-Tap. — Henry Willcox Eddy, Toledo, O.

300,983. Sink. — James Kilbourne, Columbus, O.

301,005. Sash-Fastener. — Jacob Reiff, Skippackville, Pa.

301,018. Dry Closet. — Frederick F. Street, Hartford, Conn.

301,019. Fire-Escape. — B. Frank Teal, Philadelphia, Pa.

301,022. Warm-Air Furnace. — John Walsh, Newton, Io.

301,058. Bit-Brace. — Wm. A. Ives, New Haven, Conn.

301,061. Hot and Cold Water Faucet. — James C. Loucks, Grand Rapids, Mich.

SUMMARY OF THE WEEK.

Baltimore.

Dwellings. — Francis I. King, Esq., is to have built 3 three-st'y brick and Connecticut brown-stone dwells., on the e s Park Ave., n of Madison St., one 35′ x 58′, and the other, 20′ x 85′; from designs by Chas. L. Carson, architect; John E. Marshall, builder.

Restaurant. — George A. Frederick, architect, has prepared drawings for Aug. Vanness, Esq., for a three-st'y brick building of brick, with stone and terra-cotta finish, on the triangular lot cor. Ensor and Mott Sts., 16′ x 35′ x 48′; to cost, $10,000; Wm. H. McDonald, builder.

Building Permits. — Since our last report twenty-eight permits have been granted, the more important of which are the following: —

J. H. Morrow, 2 two-st'y brick buildings, w s Coombs Alley, bet. York and Hill Sts.

Jas. Gilmore, three-st'y brick warehouse, e s Caroline St., bet. Canton Ave. and Aliceanna St.

A. F. Dunbar, three-st'y brick building, s s Federal St., e of Washington St.

Sam'l B. Derr, 7 three-st'y brick buildings, n s Townsend St., bet. John St. and Reuter Alley.

Mrs. E. Wise, four-st'y brick warehouse, n s Fayette St., bet. Liberty and Charles Sts.

Leander Foreman, 14 two-st'y brick buildings, s s Laurens St., bet. Division and Etting Sts.

John Kuerr, three-st'y brick building, w s Riverside Ave., s of Hamburg St.

Swift & Lucy, 10 two-st'y brick buildings, w s Duncan Alley, n of Canton Ave.

G. Metzger, three st'y brick building, n s Baltimore St., bet. Carrollton Ave. and Schroeder St.

Henry Hoffman, three-st'y brick building, s s German St., bet. Eutaw and Howard Sts.

John Haus, three-st'y brick building, w s Fremont St., bet. Mulberry and Pierce Sts.

There is no change in the labor quotations.

Boston.

Building Permits. — *Brick.* — *West Concord St., Nos.* 66–74, cor. Washington St., Nos. 1643–1649, Ward 18, for Elizabeth T. Eldredge, family-hotel, 51′ x 120′, seven-st'y flat; R. Culbert & Son, builders.

Kneeland St., near Cove St., Ward 12, for Old Colony R. R. Co., store, 9′ 4″ x 20′ 8″, one-st'y flat; Samuel Stevens, builder.

Kneeland St., near Cove St., Ward 12, for Old Colony R. R. Co., store, 9′ 3″ x 41′ 4″, one-st'y flat; Samuel Stevens, builder.

Mayo St., near Castle St., Ward 16, for Boston Building Association, 2 tenements, 22′ x 52′ and 37′ 6″ x 50′, four-st'y flat; A. J. West, builder.

Wood. — *Lexington St., Nos.* 241 *and* 243, Ward 1, for Harrison W. Cottle, 2 dwells., 17′ x 28′ and 21′ x 50′, two-st'y mansard; Ephraim Curry, builder.

West First St., No. 345, Ward 14, for E. P. Morrill and S. Ricker, stable, 31′ x 40′ and 32′ x 60′, two-st'y flat.

Salem St., n s, Ward 23, for James Jackson, dwell., 15′ x 20′ and 22′ x 29′, two-st'y pitch.

Salem St., n s, Ward 23, for Nathaniel Crawshaw, dwell., 15′ x 20′ and 22′ x 29′, two-st'y pitch.

Brown Ave., near Sharon St., Ward 23, for Philip H. Butler, dwell., 20′ and 35′ x 40′, two-st'y pitch; Spinney, Haddock & Co., builders.

Adams St., cor. Forrest St., Ward 24, for Jason Gordon, green-house, 10′ x 16′ and 20′ x 72′, one-st'y pitch; Jason Gordon, builder.

Brooklyn.

Building Permits. — *Front St., Nos.* 178 *and* 180, two-st'y brick factory, tin roof; cost, $10,000; owner, The Tin Plate Decorating Co., 72 John St., New York; architect, Wm. J. Fryer, Jr.; builder, Richard Shapter.

Graham St., No. 73, e s, 170′ n Park Ave., four-st'y brick tenement, tin roof; owner, Phillip O'Reilly, on premises; architect, Wm. H. Burhans.

Atlantic Ave., n s, 234 West Bond St., 6 four-st'y brick stores and flats, tin roofs; cost, each, $6,000; owner, Chester Bedell, 337 Smith St.; architect, Chas. E. Hebberd.

Herkimer St., n s, 100′ e Saratoga Ave., 8 two-st'y frame dwells., shingle roofs; cost, each, $4,500; owner, J. H. Bishop, 49 Broadway, New York; architect, M. J. Morrill; builder, G. H. Chamberlin.

Central Ave., No. 66, w s, 50′ n Melrose St., three-st'y frame store and tenement, tin roof; cost, $4,000; owner, John Repp, on premises; architect, Th. Engelhardt; builders, N. Maurer and P. Kunzweiler.

Newell St., No. 100, e s, 267′ s Norman Ave., four-st'y frame tenement, tin roof; cost, $5,500; owner, James McCafferty, 102 Newell St.; architect, Th. Engelhardt; builder, John Fallon.

Hooper St., n s, 85′ w Harrison Ave., 2 two-st'y brick dwells., tin roofs; cost, each, $4,500; owner, John Sunderlan, 39 Ross St.; architect, Frank Holmberg.

King St., No. 113, w s, about 200′ s Van Brunt St., three-st'y brick tenement, tin roof; cost, about $5,500; owner, C. Smith, 115 King St.; architect, D. H. Gilvarry; builder, P. McGuinn.

Central Ave., s w cor. Himrod St., 2 three-st'y stores and tenements, tin roofs; cost, each, $5,500; owner, John Kelsh, 121 Stanhope St.; architect, Frank Holmberg; builder, not selected.

Bremen St., s e cor. Flushing Ave., 6 three-st'y frame tenements, tin roofs; cost, each, $4,000; owner and builder, George Loeffler, 76 Jefferson St.; architect, H. Vollweiler.

Wallabout St., n s, 250′ w Harrison Ave., three-st'y frame tenement, tin roof; cost, $4,300; owner, M. Haaf, 831 Broadway; architect, H. Vollweiler.

Monroe St., s e cor. Lewis Ave., three-st'y brown-stone dwell., tin roof; cost, $8,000; owner, etc., Wm. Godfrey, 123 Stuyvesant Ave.

Oakland St., e s, 200′ s Norman Ave., three-st'y frame tenement, gravel roof; cost, $3,800; owner, Mrs. Barton; architect, I. Pappe; builders, D. H. Hulse and S. Randall.

McDonough St., n s, 38′ e Sumner Ave., 3 two-st'y Connecticut brown-stone dwells., tin roofs; cost, each, $4,500; owner, John F. Saddington, 462 Willoughby Ave.; architect and carpenter, F. D. Vrooman; mason, John Softy.

Broadway, Nos. 745 *and* 747 e s, 75′ s Locust St., 2 four-st'y frame stores and tenements, tin roofs; cost, each, $7,000; owner, J. H. Dewes and A. Nickel, 853 Willoughby Ave. and 25 Stuyvesant Ave.; architect, Th. Engelhardt; builders, John Auer and Michael Metzen.

Judge St., Nos. 15 *and* 17, w s, 76′ n Powers St., 2 three-st'y frame tenements, tin roofs; cost, each, $4,000; owner and builder, Michael Metzer, 300 Ainslie St.; architect, Th. Engelhardt.

Fayette St., No. 22, s s, 225′ e Broadway, three-st'y frame tenement, tin roof; cost, $4,500; owner, Gottlieb Stutt, on premises; architect, Th. Engelhardt; builders, H. Bruchhaeuser and Christ. Schneider.

Johnson Ave., n e cor. Gardner Ave., three-st'y factory, gravel roof; cost, $8,000; owners, Settle Bros., 96 Greene Ave.; architect, M. J. Morrill; builder, Peter R. Kelly.

South Third St., Nos. 56 *and* 58, 2 four-st'y brick tenements, tin roofs; cost, each, $7,000; owner, Peter Hess, 54 Grand St.; architect, Th. Engelhardt; builders, George Lehrian & Son and George Reis.

Fourth St., s s, 185′ e Fifth Ave., two-st'y and basement dwells.; also *Fourth St.*, n s, e Fifth Ave., 5 two-st'y brick tenements, tin roofs; cost, each, $3,000; owner, Magdalena Franz, 418 Third St.; architects, Parfitt Bros.; builder, J. P. Kenny.

Tompkins Ave., s e cor. Willoughby Ave., four-st'y brown-stone store and tenement, tin roof; cost, $13,000; owner and builder, R. C. Addy; architect, J. D. Reynolds.

Sumner Ave., w s, 74′ s Hart St., 3 two-st'y brick dwells., tin roofs; cost, each, $5,500; owner, R. F. Clayton, 401 Fourteenth St.; architect, W. F. Clayton.

Twentieth St., No. 333, between Sixth and Seventh Aves., three-st'y frame tenement, tin roof; cost, $3,000; owner, John Mee, 335 Twentieth St.; architect, W. H. Wirth; builders, T. Rees and Edwards Bros.

Fulton St., No. 1461, n s, 95′ e Tompkins Ave., three-st'y brick and brown-stone store and dwell., tin roof; cost, $7,500; owner, Wm. Graf, 1429 Fulton St.; architect, Th. Engelhardt; builder, E. T. Rutan.

Alterations. — *Withers St.*, n w cor. Leonard St., add one st'y, interior alterations, etc.; cost, $4,000; owner, John L. Witte, 397 Manhattan Ave.; architect, Fred. Weber; builders, Doyle & Brazill.

Smith St., No. 190, three-st'y brick extension, tin roof, interior alterations, etc.; cost, $5,000; owner, M. Louis, 310 Warren St.; builders, John Kerney and E. G. Vail.

Franklin Ave., No. 55, reduce height of building; also three-st'y brick extension, gravel and felt roof; cost, $3,500; owner, Gutta-Percha Co.; architect, John Murphy; builder, not known.

Flatbush Ave., s s, 375′ e Fourth Ave., add two stories; cost, $5,000; owners, G. F. and E. C. Swift, Boston, Mass.; architect, F. C. Muller; builder, B. F. Bailey.

Chicago.

Building Permits. — Boese & Gloeckner, 2 four-st'y stores and dwells., 628–630 Milwaukee Ave.; cost 20,000; architect, T. Karls.

Schoenhofen Brewing Co., three-st'y barn, 23–29 Seward St.; cost, $15,000; architect, Otto Matz.

F. F. Burns, three-st'y dwell., 579 Lasalle Ave.; cost, $12,000; architect, T. Karls.

O. Caristrom, two-st'y dwell., 805 Seymour St.; cost, $2,500.

M. Koegel, two-st'y dwell., 331 North Paulina St.; cost, $2,800.

A. Aldenstadt, two-st'y dwell., 564 Superior St.; cost, $3,300.

P. Ryan, two-st'y dwell., 293 Elm St.; cost, $3,000; architect, G. S. Spoor.

Dr. Baxter, 3 two-st'y dwell., cor. Aberdeen and Monroe Sts.; cost, $20,000; architect, J. W. Ackerman.

Wm. O'Brien, two-st'y barn, 3820–22 Wabash Ave.; cost, $3,800.

P. Beck, two-st'y dwell., 214 Henry St.; cost, $3,400.

P. Finnerty, two-st'y dwell., 276 Centre Ave.; cost, $3,000.

E. Klemme, two-st'y flats, 739 Jefferson St.; cost, $3,800.

Sw. Evangelical Lutheran Salv. Church, one-st'y church, 2815–25 Portland Ave.; cost, $20,000; architect, C. O. Hansen.

Wm. H. Hoyt, 2 four-st'y flats, 247–249 Illinois St.; cost, $17,000; architect, A. Smith.

Dr. Craten, two-st'y flats, Wentworth Ave.; cost, $3,300.

M. Seger, two-st'y store and dwell., 2901 Hanover St.; cost, $2,500.

A. Schroeder, two-st'y flats, 634 Twenty-first St.; cost, $3,000.

The Board of Education, three-st'y school-house, cor. Illinois and Cass Sts.; cost, $50,000; architect, J. J. Flanders.

T. F. Andrews, 6 two-st'y dwells., Rhodes Ave.; cost, $20,000; architect, R. Ray; builder, J. Griffith.

F. Koesche, four-st'y store and dwell., 118 Clybourne Ave.; cost, $8,000.

Mary Cozzens, two-st'y flats, 363 Thirty-fourth St; cost, $3,000.

A. Strausse, two-st'y dwell., 3337 Wabash Ave.; cost, $16,000; architects, Addler & Sullivan.

F. Baridzy, three-st'y flats, 112 Wesson St.; cost, $5,000; architect, H. Kley.

W. D. Kerfoot & Co., 3 one-and-one-half-st'y cottages, Rice St.; cost, $4,500.

D. Quill, two-st'y store and flats, 339–341 West Van Buren St.; cost, $6,000; architect, H. Kley.

M. Madousek, three-st'y store and flats, 635 Blue Island Ave.; cost, $7,800.

V. Ceucek, three-st'y flats, 197 Dekoven St.; cost, $6,000.

E. Martin, two-st'y flats, 3058 Main St.; cost, $4,000.

Illinois Club, two-st'y club-house, 154 Ashland Ave.; cost, $20,000; architect, I. R. Willett.

A. Leichtenberger, three-st'y store and flats, 336 Maxwell St.; cost, $5,000.

George H. Edbrooke, 2 two-st'y dwells., Calumet Ave.; cost, $10,000; architect and builder, Geo. H. Edbrooke.

The Chicago Gas Light & Coke Co., two-st'y stable, Chatham St.; cost, $10,000.

P. Pope, three-st'y store and flats, 781 West Twelfth St.; cost, $6,000; architect, A. Bessler.

Stevenson & Jordan, two-st'y flats, Washtenau St.; cost, $3,800.

F. Follansbee, 3 two-st'y dwells., 23–27 Twenty-third St.; cost, $6,000; architect, J. W. Ackerman.

C. Carpenter, two-st'y flats, 22 North Ashland Ave.; cost, $4,400.

E. G. Bode, two-st'y flats, 364 Maxwell St.; cost, $3,000.

J. Waderstradt, two-st'y dwell., 668 Hinman St.; cost, $3,000.

J. H. Clough, four-st'y medical college, 465–467 State St.; cost, $25,000; architects, Willett & Pashley.

H. D. Runge, one-st'y dwell., 79 Ewing Place; cost, $7,000; architects, Frommann & Gelsen.

R. W. French, dwell., 301 Winchester Ave.; cost, $3,500.

F. Follansbee, two-st'y dwell., 2301 Calumet Ave.; cost, $3,000; architect, J. W. Ackerman.

H. L. Hill, two-st'y barn, 2316 Calumet Ave.; cost, $3,000.

F. C. Porter, five-st'y flats, cor. Cottage Grove Ave. and Thirty-first St.; cost, $60,000; architect, L. G. Quackenbos; builders, Geo. Lehman & Son.

P. Bauman, two-st'y dwell., 752 Twelfth St.; cost, $2,500.

Cincinnati.

Factory Buildings. — John F. Whetstone has let contracts for a five-st'y brick building on East Eighth St., for factory purposes; cost, $31,500; architect, S. E. Des Jardins.

House. — Plans are also being prepared by S. E. Des Jardins, architect, for a frame dwelling-house on East Walnut Hill, for Miss Mollie Williams; cost, about $6,000; also for a frame house at Fairmount, for J. A. Cochran, Esq.; cost, about $5,000.

Building Permits. — During the past week the following permits have been issued: —

MANHATTAN BRASS COMPANY,

Works, First Avenue, 27th to 28th Streets,

NEW YORK CITY.

HOUSEHOLD BRASS GOODS.

INTERIOR DECORATIONS,

Fenders, Fire Sets, Andirons, Fireplace-Frames, Coal-Hods,

GRATE TRIMMINGS, ETC.

Screens, Parlor Easels, Banner Stands, Etc., Etc.

FRESCO · PAINTERS ·

STAINED GLASS

THE ROB^T MITCHELL FURNITURE CO

INTERIOR WOODWORK

CINCINNATI · O

· MORRIS · DECORATIONS ·

WHEELER'S WOOD FILLER.

THE ONLY ARTICLE TO GIVE A

DURABLE, ECONOMICAL, NATURAL AND PERFECT FINISH TO HARD WOOD.

SEND FOR PAMPHLET GIVING DIRECTIONS AND INFORMATION ON FINISHING HARD WOODS.

BREINIG'S LITHOGEN SILICATE PAINT.

VERY DURABLE AND ECONOMICAL.

ONE GALLON EQUALS TWO GALLONS OR MORE OF THE BEST MIXED PAINT.

SEND FOR SAMPLE CARD OF COLORS.

WOOD DYES OR STAINS, VARNISH, OIL FINISH, & ALL REQUISITES USED IN FINISHING HARD WOOD.

THE BRIDGEPORT WOOD FINISHING CO., 40 BLEECKER ST

GRANVILLE M. BREINIG, AGENT. NEW-YORK.

BEST ROOFING IN THE WORLD

BARTLETT'S IMPROVED

VULCANIZED Double-Thick ROOFING FELT

Materials for complete roof 2¾c. per sq. ft

VULCANIZED Triple-Thick ROOFING FELT

Materials for complete roof, 3¾c. per sq ft

These felts are *thoroughly reliable*, smooth, clean and dry, easily applied by any one.

VULCAN ROOF COATING

Is the **Cheapest** and **Best** for Tin, Felt, or old shingle roofs. 50c. per gallon.

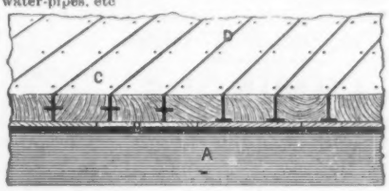
CARBONIZED SHEATHING FELT covers 16 sq. feet to the pound.

Rosin-sized Sheathing Felt, Two-Ply Roofing Felt, Three-Ply Roofing Felt, Carpet Felt, Tarred Paper, Leather Paper.

PENN ROOFING CO. 20 South Second Street PHILADELPHIA, PA.

DOLBEARE'S Water-Tight Wood Floors.

Architects and Builders will find in Dolbeare's Water-Tight Wood Floors an improvement long sought for, combining lightness, durability, and absolute water-tight qualities. For horse-car, livery, and private stables, it is rapidly taking the place of caulking or concreting. For slaughter-houses, currier's shops, factory floors, bridges, etc., it is highly recommended. In first-class stores, hotels, and public buildings, by the use of this floor it is absolutely impossible for goods or ceilings to be damaged by water leaking through the floor in case of fire, bursting of water-pipes, etc



Patented June, 1882.

In the above cut an end or sectional view is shown B representing a 7-8 matched boarding on Floor Timber, A, C showing a 3-inch planking with 3-8 Rabbetting or Groving (this can be laid in thickness from 1 inch, upwards), and D showing the Filling in the seams, applied hot, which, when set, is thoroughly adhesive to the wood and sufficiently elastic to allow for any ordinary shrinking, swelling or settling.

Orderr respectfully solicited, and personally attended to, by addressing

W. L. DOLBEARE,
Atlantic Avenue, Fort Hill Wharf, Boston.

MIDDLESEX HORSE RAILROAD COMPANY.

BOSTON, June 14, 1882.

W. L. DOLBEARE, ESQ.

Dear Sir:—It affords us pleasure to recommend your process for "Making Floors Absolutely Water-Tight." In our new Bunker-Hill Stable, where we have stalls on three floors (one directly over the other), it has given the most perfect satisfaction, and makes no extra strain upon the walls of the building, as would be the case if the old method of "Caulking" was resorted to. In very many respects I regard your floor as very much superior to any caulked floor. Very truly, CHARLES E. POWERS, Pres

SAMUEL D. KELLEY, ARCHITECT.

BOSTON, June 21, 1882.

W. L. DOLBEARE, ESQ.

Dear Sir:—I have used Dolbeare's Improved Water-Tight Wood Floors for stable purposes to the extent of about fourteen thousand (14,000) square feet, and they have given complete satisfaction. I consider it superior to caulking or other Improved Water-Tight Floors. Yours, &c.,

SAMUEL D KELLEY.

Something New for the Stable.

Read's Patent Harness Bracket.

An Article long wanted but never before made.

Holds the whole harness, takes no more room than the ordinary hook or peg, can be used for both single and double harness. Gives the harness-case a neat appearance, as it carries the harness up uniformly in width with the saddle, beside keeping the bridle and breastplate in their proper shape. They are neatly japanned, with gilt facings. Price **$18** per dozen. Are now in use in over 100 first-class private stables in and about Boston.

Each bracket lettered **"J. J. Read, Boston, Mass."** For sale by dealers everywhere.

Indorsed and approved by the following named gentlemen, all of whom have them in use:

Boston: R. H. White, J. M. Sears, J. T. Morse, Jr., Thos. Motley. Cambridge: F. A. Kennedy. Portsmouth, N. H.: Hon. Frank Jones. Milton: H. P. Kidder, Col. H. S. Russell, J. M. Forbes. Dedham: A. W. Nickerson. Newton: J. C. Potter. Salem: Dr. W. Saunders. Waltham: J. H. Ellison. Readville: C. G. White. Beverly: Dr. Chas. Haddock. Swampscott: C. P. Curtis.

The public are cautioned against all similar brackets, not marked with my stamp, as such brackets are infringements of patents held by me.

Also cedar-top riding-saddle bracket. Price $3.50 each. An whip-rack for English coach and straight whip combined. Price 50 cents each.

JAMES J. READ, 13 Tremont Row, Room 10.

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

300,771. Bit-Stock. — John S. Fray, Bridgeport, Conn.

300,773. Lock. — James Gwynn, Detroit, Mich.

300,776. Window-Screen. — George W. Henry, West Jersey, Ill.

300,780. Bench-Dog. — Chas. C. Johnson, Springfield, Vt.

300,790. Hydraulic Cement. — John Murphy, Columbus, O.

300,797. Fire-Escape. — Jas. Edward Post, Poughkeepsie, N. Y.

300,822. Fire-Escape. — James B. Wiltshire, Cincinnati, O.

300,843. Fire-Escape. — Jesse H. Burks, Los Angelos, Cal.

300,844. Weather-Strip. — Jacques Couturier, Lyons, France.

300,857. Fire-Escape. — Lewis J. Evans, New York, N. Y.

300,861. Construction of Buildings. — Edwin Gilbert, Georgetown, Conn.

300,870. Drain-Cleaner. — George Washington, Immel, Logansport, Ind.

300,881. Window-Screen. — Egbert E. Masters, Sacramento, Cal.

300,882. Drain-Tile Machine. — Calvin J. Merrill, Des Moines, Io.

300,898. Pipe-Cutter. — Edwin A. Robbins, Boston, Mass.

300,901. Die-Stock and Die. — Nelson Sawyer, Hartford, Conn.

300,902. Fire-Escape. — John G. Schiller, Youngstown, O.

300,905. Water-Closet. — James Semple, Cincinnati, O.

300,917. Hydraulic Cushion for Water-Pipes. — John Story, Cincinnati, O.

300,932. Elevator-Guard. — Henry C. Wilcox, Boston, Mass.

300,939. Weather-Strip. — William D. Bennett, Bedford, Io.

300,946. Pulp-Board for Roofing Purposes. — Philip Carey, Cincinnati, O.

300,954. Sash-Holder. — Edwin B. Clement, Marshalltown, Io.

300,961. Screw-Tap. — Henry Willcox Eddy, Toledo, O.

300,983. Sink. — James Kilbourne, Columbus, O.

301,005. Sash-Fastener. — Jacob Reiff, Skippackville, Pa.

301,018. Dry Closet. — Frederick F. Street, Hartford, Conn.

301,019. Fire-Escape. — B. Frank Teal, Philadelphia, Pa.

301,022. Warm-Air Furnace.—John Walsh, Newton, Io.

301,058. Bit-Brace. — Wm. A. Ives, New Haven, Conn.

301,061. Hot and Cold Water Faucet. — James C. Loucks, Grand Rapids, Mich.

SUMMARY OF THE WEEK.

Baltimore.

Dwellings. — Francis I. King, Esq., is to have built 3 three-st'y brick and Connecticut brown-stone dwells., on the e s Park Ave., n of Madison St., one 35′ x 58′, and the other, 20′ x 85′; from designs by Chas. L. Carson, architect; John E. Marshall, builder.

Restaurant. — George A. Frederick, architect, has prepared drawings for Aug. Vanness, Esq., for a three-st'y brick building of brick, with stone and terra-cotta finish, on the triangular lot cor. Ensor and Mott Sts., 19′ x 35′ x 48′; to cost, $10,000; Wm. H. McDonald, builder.

Building Permits. — Since our last report twenty-eight permits have been granted, the more important of which are the following: —

J. H. Morrow, 2 two-st'y brick buildings, w s Coombs Alley, bet. York and Hill Sts.

Jas. Gilmore, three-st'y brick warehouse, e s Caroline St., bet. Canton Ave. and Aliceanna St.

A. F. Dunbar, three-st'y brick building, s s Federal St., e of Washington St.

Sam'l B. Derr, 7 three-st'y brick buildings, n s Townsend St., bet. John St. and Reuter Alley.

Mrs. E. Wise, four-st'y brick warehouse, n s Fayette St., bet. Liberty and Charles Sts.

Leander Foreman, 14 two-st'y brick buildings, s s Laurens St., bet. Division and Etting Sts.

John Knerr, three-st'y brick building, w s Riverside Ave., s of Hamburg St.

Swift & Lucy, 10 two-st'y brick buildings, w s Duncan Alley, n of Canton Ave.

G. Metzger, three st'y brick building, n s Baltimore St., bet. Carrollton Ave. and Schroeder st.

Henry Hoffman, three-st'y brick building, s s Germans St., bet. Eutaw and Howard Sts.

John Haus, three-st'y brick building, w s Fremont St., bet. Mulberry and Pierce Sts.

There is no change in the labor quotations.

Boston.

Building Permits. — *Brick. — West Concord St., Nos.* 66-74, cor. Washington St., Nos. 1643-1649, Ward 18, for Elizabeth T. Eldredge, family-hotel, 51′ x 120′, seven-st'y flat; R. Culbert & Son, builders.

Kneeland St., near Cove St., Ward 12, for Old Colony R. R. Co., store, 9′ 4″ x 20′ 8″, one-st'y flat; Samuel Stevens, builder.

Kneeland St., near Cove St., Ward 12, for Old Colony R. R. Co., store, 9′ 3″ x 41′ 4″, one-st'y flat; Samuel Stevens, builder.

Mayo St., near Castle St., Ward 16, for Boston Building Association, 2 tenements, 22′ x 52′ and 37′ 6″ x 50′, four-st'y flat; A. J. West, builder.

Wood. — Lexington St., Nos. 241 *and* 243, Ward 1, for Harrison W. Cottle, 2 dwells., 17′ x 28′ and 21′ x 50′, two-st'y mansard; Ephraim Curry, builder.

West First St., No. 345, Ward 14, for E. P. Morrill and S. Ricker, stable, 31′ x 40′ and 32′ x 60′, two-st'y flat.

Salem St., n s, Ward 23, for James Jackson, dwell., 15′ x 20′ and 22′ x 29′, two-st'y pitch.

Salem St., n s, Ward 23, for Nathaniel Crawshaw, dwell., 15′ x 20′ and 22′ x 29′, two-st'y pitch.

Brown Ave., near Sharon St., Ward 23, for Philip H. Butler, dwell., 20′ and 35′ x 40′, two-st'y pitch; Spinney, Haddock & Co., builders.

Adams St., cor. Forrest St., Ward 24, for Jason Gordon, green-house, 10′ x 16′ and 20′ x 72′, one-st'y pitch; Jason Gordon, builder.

Brooklyn.

Building Permits. — *Front St., Nos.* 178 *and* 180, two-st'y brick factory, tin roof; cost, $10,000; owner, The Tin Plate Decorating Co., 72 John St., New York; architect, Wm. J. Fryer, Jr.; builder, Richard Shapter.

Graham St., No. 73, e s, 170′ n Park Ave., four-st'y brick tenement, tin roof; owner, Phillip O'Reilly, on premises; architect, Wm. H. Burhaus.

Atlantic Ave., n s, 234 West Bond St., 6 four-st'y brick stores and flats, tin roofs; cost, each, $6,000; owner, Chester Bedell, 337 Smith St.; architect, Chas. E. Hebberd.

Herkimer St., n s, 100′ e Saratoga Ave., 8 two-st'y frame dwells., shingle roofs; cost, each, $4,500; owner, J. H. Bishop, 49 Broadway, New York; architect, M. J. Morrill; builder, G. H. Chamberlin.

Central Ave., No. 66, w s, 50′ n Melrose St., three-st'y frame store and tenement, tin roof; cost, $4,000; owner, John Repp, on premises; architect, Th. Engelhardt; builders, N. Maurer and P. Kunzweiler.

Newell St., No. 100, e s, 267′ s Norman Ave., four-st'y frame tenement, tin roof; cost, $5,500; owner, James McCafferty, 102 Newell St.; architect, Th. Engelhardt; builder, John Fallon.

Hooper St., n s, 85′ w Harrison Ave., 2 two-st'y brick dwells., tin roofs; cost, each, $4,500; owner, John Sunderlan, 39 Ross St.; architect, Frank Holmberg.

King St., No. 113, w s, about 200′ s Van Brunt St., three-st'y brick tenement, tin roof; cost, about $5,500; owner, C. Smith, 115 King St.; architect, D. H. Gilvarry; builder, P. McGuinn.

Central Ave., s w cor. Himrod St., 2 three-st'y stores and tenements, tin roofs; cost, each, $5,500; owner, John Kelsh, 121 Stanhope St.; architect, Frank Holmberg; builder, not selected.

Bremen St., s e cor. Flushing Ave., 6 three-st'y frame tenements, tin roofs; cost, each, $4,000; owner and builder, George Loeffler, 76 Jefferson st.; architect, H. Vollweiler.

Wallabout St., n s, 250′ w Harrison Ave., three-st'y frame tenement, tin roof; cost, $4,300; owner, M. Haaf, 531 Broadway; architect, H. Vollweiler.

Monroe St., s e cor. Lewis Ave., three-st'y brown-stone dwell., tin roof; cost, $8,000; owner, etc., Wm. Godfrey, 123 Stuyvesant Ave.

Oakland St., e s, 200′ s Norman Ave., three-st'y frame tenement, gravel roof; cost, $3,800; owner, Mrs. Barton; architect, L. Pappe; builders, D. H. Hulse and S. Randall.

McDonough St., n s, 38′ e Sumner Ave., 3 two-st'y Connecticut brown-stone dwells., tin roofs; cost, each, $4,500; owner, John F. Saddington, 462 Willoughby Ave.; architect and carpenter, F. D. Vrooman; mason, John Softy.

Broadway, Nos. 745 *and* 747 e s, 75′ s Locust St., 2 four-st'y frame stores and tenements, tin roofs; cost, each, $7,000; owner, J. H. Dewes and A. Nickel, 853 Willoughby Ave. and 25 Stuyvesant Ave.; architect, Th. Engelhardt; builders, John Auer and Michael Metzen.

Judge St., Nos. 15 *and* 17, w s, 76′ n Powers St., 2 three-st'y frame tenements, tin roofs; cost, each, $4,000; owner and builder, Michael Metzer, 300 Ainslie St.; architect, Th. Engelhardt.

Fayette St., No. 22, s s, 225′ e Broadway, three-st'y frame tenement, tin roof; cost, $4,500; owner, Gottlieb Stutt, on premises; architect, Th. Engelhardt; builders, H. Bruchhaeuser and Christ. Schneider.

Johnson Ave., n e cor. Gardner Ave., three-st'y factory, gravel roof; cost, $8,000; owners, Settle Bros., 96 Greene Ave.; architect, M. J. Morrill; builder, Peter R. Kelly.

South Third St., Nos. 56 *and* 58, 2 four-st'y brick tenements, tin roofs; cost, each, $7,000; owner, Peter Hess, 54 Grand St.; architect, Th. Engelhardt; builders, George Lehrian & Son and George Reis.

Fourth St., s s, 185′ e Fifth Ave., two-st'y and basement dwells.; also *Fourth St.*, n s, e Fifth Ave., 5 two-st'y brick tenements, tin roofs; cost, each, $3,000; owner, Magdalena Franz, 418 Third St.; architects, Parfitt Bros.; builder, J. P. Kenny.

Tompkins Ave., s e cor. Willoughby Ave., four-st'y brown-stone store and tenement, tin roof; cost, $13,000; owner and builder, R. C. Addy; architect, J. D. Reynolds.

Sumner Ave., w s, 74′ s Hart St., 3 two-st'y brick dwells., tin roofs; cost, each, $5,500; owner, R. F. Clayton, 401 Fourteenth St.; architect, W. F. Clayton.

Twentieth St., No. 333, between Sixth and Seventh Aves., three-st'y frame tenement, tin roof; cost, $3,000; owner, John Mee, 335 Twentieth St.; architect, W. H. Wirth; builders, T. Rees and Edwards Bros.

Fulton St., No. 1461, n s, 95′ e Tompkins Ave., three-st'y brick and brown-stone store and dwell., tin roof; cost, $7,500; owner, Wm. Graf, 1429 Fulton St.; architect, Th. Engelhardt; builder, E. T. Rutan.

Alterations. — *Withers St.*, n w cor. Leonard St., add one st'y, interior alterations, etc.; cost, $4,000; owner, John L. Witte, 397 Manhattan Ave.; architect, Fred. Weber; builders, Doyle & Brazill.

Smith St., No. 190, three-st'y brick extension, tin roof, interior alterations, etc.; cost, $5,000; owner, M. Louis, 310 Warren St.; builders, John Kerney and E. G. Vail.

Franklin Ave., No. 55, reduce height of building; also three-st'y brick extension, gravel and felt roof; cost, $3,500; owner, Gutta-Percha Co.; architect, John Murphy; builder, not known.

Flatbush Ave., s s, 375′ e Fourth Ave., add two stories; cost, $5,000; owners, G. F. and E. C. Swift, Boston, Mass.; architect, F. C. Muller; builder, B. F. Bailey.

Chicago.

Building Permits. — Boese & Gloeckner, 2 four-st'y stores and dwells., 628-630 Milwaukee Ave.; cost 20,000; architect, T. Karls.

Schoenhofen Brewing Co., three-st'y barn, 23-29 Seward St.; cost, $15,000; architect, Otto Matz.

F. F. Burns, three-st'y dwell., 579 Lasalle Ave.; cost, $12,000; architect, T. Karls.

O. Caristrom, two-st'y dwell., 805 Seymour St.; cost, $2,500.

M. Koegel, two-st'y dwell., 331 North Paulina St.; cost, $2,800.

A. Aldenstadt, two-st'y dwell., 564 Superior St.; cost, $3,300.

P. Ryan, two-st'y dwell., 293 Elm St.; cost, $3,000; architect, G. S. Spoor.

Dr. Baxter, 3 two-st'y dwell., cor. Aberdeen and Monroe Sts.; cost, $20,000; architect, J. W. Ackerman.

Wm. O'Brien, two-st'y barn, 3820-22 Wabash Ave.; cost, $3,800.

P. Beck, two-st'y dwell., 214 Henry St.; cost, $3,400.

P. Finnerty, two-st'y dwell., 276 Centre Ave.; cost, $3,000.

E. Klemme, two-st'y flats, 739 Jefferson St.; cost, $3,800.

Sw. Evangelical Lutheran Salv. Church, one-st'y church, 2815-25 Portland Ave.; cost, $20,000; architect, C. O. Hansen.

Wm. H. Hoyt, 2 four-st'y flats, 247-249 Illinois St.; cost, $17,000; architect, A. Smith.

Dr. Craten, two-st'y flats, Wentworth Ave.; cost, $3,300.

M. Seger, two-st'y store and dwell., 2901 Hanover St.; cost, $2,500.

A. Schroeder, two-st'y flats, 634 Twenty-first St.; cost, $3,000.

The Board of Education, three-st'y school-house, cor. Illinois and Cass Sts.; cost, $50,000; architect, J. J. Flanders.

T. F. Andrews, 6 two-st'y dwells., Rhodes Ave.; cost, $20,000; architect, R. Ray; builder, J. Griffith.

F. Koesche, four-st'y store and dwell., 118 Clybourne Ave.; cost, $8,000.

Mary Cozzens, two-st'y flats, 363 Thirty-fourth St; cost, $3,000.

A. Strausse, two-st'y dwell., 3337 Wabash Ave.; cost, $16,000; architects, Addler & Sullivan.

F. Baridzy, three-st'y flats, 112 Wesson St.; cost, $5,000; architect, H. Kley.

W. D. Kerfoot & Co., 3 one-and-one-half-st'y cottages, Rice St.; cost, $4,500.

D. Quill, two-st'y store and flats, 339-341 West Van Buren St.; cost, $6,000; architect, H. Kley.

M. Madousek, three-st'y store and flats, 635 Blue Island Ave.; cost, $7,800.

V. Ceucek, three-st'y flats, 197 Dekoven St.; cost, $6,000.

E. Martin, two-st'y flats, 3058 Main St.; cost, $4,000.

Illinois Club, two-st'y club-house, 154 Ashland Ave.; cost, $20,000; architect, I. R. Willett.

A. Leichtenberger, three-st'y store and flats, 336 Maxwell St.; cost, $5,000.

George H. Edbrooke, 2 two-st'y dwells., Calumet Ave.; cost, $10,000; architect and builder, Geo. H. Edbrooke.

The Chicago Gas Light & Coke Co., two-st'y stable, Chatham St.; cost, $10,000.

P. Pope, three-st'y store and flats, 781 West Twelfth St.; cost, $6,000; architect, A. Bessler.

Stevenson & Jordan, two-st'y flats, Washtenau St.; cost, $3,800.

F. Follansbee, 3 two-st'y dwells., 23-27 Twenty-third St.; cost, $6,000; architect, J. W. Ackerman.

C. Carpenter, two-st'y flats, 22 North Ashland Ave.; cost, $4,400.

E. G. Bode, two-st'y flats, 364 Maxwell St.; cost, $3,000.

J. Waderstradt, two-st'y dwell., 668 Hinman St.; cost, $3,000.

J. H. Clough, four-st'y medical college, 465-467 State St.; cost, $25,000; architects, Willett & Pashley.

H. D. Runge, one-st'y dwell., 79 Ewing Place; cost, $7,000; architects, Frommann & Gebsen.

R. W. French, dwell., 301 Winchester Ave.; cost, $3,500.

F. Follansbee, two-st'y dwell., 2301 Calumet Ave.; cost, $3,000; architect, J. W. Ackerman.

H. L. Hill, two-st'y barn, 2316 Calumet Ave.; cost, $3,000.

F. C. Porter, five-st'y flats, cor. Cottage Grove Ave. and Thirty-first St.; cost, $60,000; architect, L. G. Quackenbos; builders, Geo. Lehman & Son.

P. Bauman, two-st'y dwell., 752 Twelfth St.; cost, $2,500.

Cincinnati.

Factory Buildings. — John F. Whetstone has let contracts for a five-st'y brick building on East Eighth St., for factory purposes; cost, $31,500; architect, S. E. Des Jardins.

House. — Plans are also being prepared by S. E. Des Jardins, architect, for a frame dwelling-house on East Walnut Hill, for Miss Mollie Williams; cost, about $6,000; also for a frame house at Fairmount, for J. A. Cochran, Esq.; cost, about $5,000.

Building Permits. — During the past week the following permits have been issued: —

MANHATTAN BRASS COMPANY,

Works, First Avenue, 27th to 28th Streets,

NEW YORK CITY.

HOUSEHOLD BRASS GOODS.

INTERIOR DECORATIONS,

Fenders, Fire Sets, Andirons, Fireplace-Frames, Coal-Hods,

GRATE TRIMMINGS, ETC.

Screens, Parlor Easels, Banner Stands, Etc., Etc.

FRESCO · PAINTERS ·

THE ROBT MITCHELL FURNITURE CO CINCINNATI · O

STAINED GLASS

INTERIOR WOODWORK

· MORRIS · DECORATIONS ·

WHEELER'S WOOD FILLER.

THE ONLY ARTICLE TO GIVE A

DURABLE, ECONOMICAL, NATURAL AND PERFECT FINISH TO HARD WOOD.

SEND FOR PAMPHLET GIVING DIRECTIONS AND INFORMATION ON FINISHING HARD WOODS.

BREINIG'S LITHOGEN SILICATE PAINT.

VERY DURABLE AND ECONOMICAL.

ONE GALLON EQUALS TWO GALLONS OR MORE OF THE BEST MIXED PAINT.

SEND FOR SAMPLE CARD OF COLORS.

WOOD DYES OR STAINS, VARNISH, OIL FINISH, AND ALL REQUISITES USED IN FINISHING HARD WOOD.

THE BRIDGEPORT WOOD FINISHING CO., 40 BLEECKER ST

GRANVILLE M. BREINIG, AGENT. NEW-YORK.

BEST ROOFING IN THE WORLD

BARTLETT'S IMPROVED

VULCANIZED Double-Thick ROOFING FELT

Materials for complete roof, 2½c. per sq. ft

VULCANIZED Triple-Thick ROOFING FELT

Materials for complete roof, 2¾c. per sq. ft

These felts are *thoroughly reliable*, smooth, clean and dry, easily applied by any one.

VULCAN ROOF COATING

Is the **Cheapest** and **Best** for Tin, Felt, or old shingle roofs. 50c. per gallon.

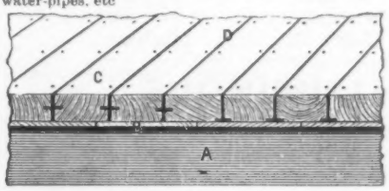
CARBONIZED SHEATHING FELT covers 16 sq. feet to the pound.

Rosin-sized Sheathing Felt, Two-Ply Roofing Felt, Three-Ply Roofing Felt, Carpet Felt, Tarred Paper, Leather Paper.

PENN ROOFING CO. 20 South Second Street PHILADELPHIA, PA.

DOLBEARE'S Water-Tight Wood Floors.

Architects and Builders will find in Dolbeare's Water-Tight Wood Floors an improvement long sought for, combining lightness, durability, and absolute water-tight qualities. For horse-car, livery, and private stables, it is rapidly taking the place of caulking or concreting. For slaughter-houses, currier's shops, factory floors, bridges, etc., it is highly recommended. In first-class stores, hotels, and public buildings, by the use of this floor it is absolutely impossible for goods or ceilings to be damaged by water leaking through the floor in case of fire, bursting of water-pipes, etc



Patented June, 1882.

In the above cut an end or sectional view is shown B representing a 7-8 matched boarding on Floor Timber, A, C showing a 3-inch planking with 3-8 Rabbetting or Groving (this can be laid in thickness from 1 inch, upwards), and D showing the Filling in the seams, applied hot, which, when set, is thoroughly adhesive to the wood and sufficiently elastic to allow for any ordinary shrinking, swelling or settling.

Orders respectfully solicited, and personally attended to, by addressing

W. L. DOLBEARE,

Atlantic Avenue, Fort Hill Wharf, Boston.

MIDDLESEX HORSE RAILROAD COMPANY.

BOSTON, June 14, 1882.

W. L. DOLBEARE, Esq.

Dear Sir:—It affords us pleasure to recommend your process for "Making Floors Absolutely Water-Tight." In our new Bunker-Hill Stable, where we have stalls on three floors (one directly over the other), it has given the most perfect satisfaction, and makes no extra strain upon the walls of the building, as would be the case if the old method of "Caulking" was resorted to. In very many respects I regard your floor as very much superior to any caulked floor. Very truly, CHARLES E. POWERS, Pres

SAMUEL D. KELLEY, ARCHITECT.

BOSTON, June 21, 1882.

W. L. DOLBEARE, Esq.

Dear Sir:—I have used Dolbeare's Improved Water-Tight Wood Floors for stable purposes to the extent of about fourteen thousand (14,000) square feet, and they have given complete satisfaction. I consider it superior to caulking or other Improved Water-Tight Floors. Yours, &c.,

SAMUEL D KELLEY.

Something New for the Stable.

Read's Patent Harness Bracket.

An Article long wanted but never before made.

Holds the whole harness, takes no more room than the ordinary hook or peg, can be used for both single and double harness. Gives the harness-case a neat appearance, as it carries the harness up uniformly in width with the saddle, beside keeping the bridle and breastplate in their proper shape. They are neatly japanned, with gilt facings. Price **$18** per dozen. Are now in use in over 100 first-class private stables in and about Boston.

Each bracket lettered **"J. J. Read, Boston, Mass."** For sale by dealers everywhere.

Indorsed and approved by the following named gentlemen, all of whom have them in use:

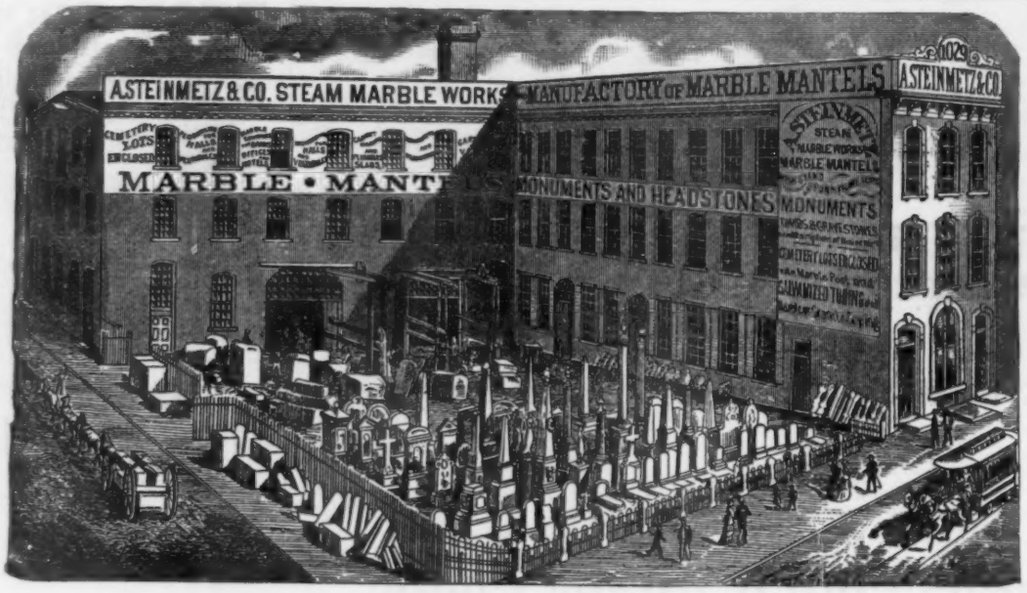
Boston; R. H. White, J. M. Sears, J. T. Morse, Jr., Thos. Motley. Cambridge: F. A. Kennedy. Portsmouth, N. H.: Hon. Frank Jones. Milton: H. P. Kidder, Col. H. S. Russell, J. M. Forbes. Dedham: A. W. Nickerson. Newton: J. C. Potter. Salem: Dr. W. Saunders. Waltham: J. H. Ellison. Readville: C. G. White. Beverly: Dr. Chas. Haddock. Swampscott; C. P. Curtis.

The public are cautioned against all similar brackets, not marked with my stamp, as such brackets are infringements of patents held by me.

Also cedar-top riding-saddle bracket. Price $3.50 each. An whip-rack for English coach and straight whip combined. Price 50 cents each.

JAMES J. READ, 13 Tremont Row, Room 10.

CONSTANTLY ON HAND
A Large Assortment of
MARBLE MANTELS,
IN WHITE AND COLORED MARBLES.



MONUMENTS and GRAVE
Tiling for Floors and Vestibules,
Cabinet Makers' and Plumbers' Slabs.

Office, 1029 Ridge Avenue, above Willow, Philadelphia, Pa.

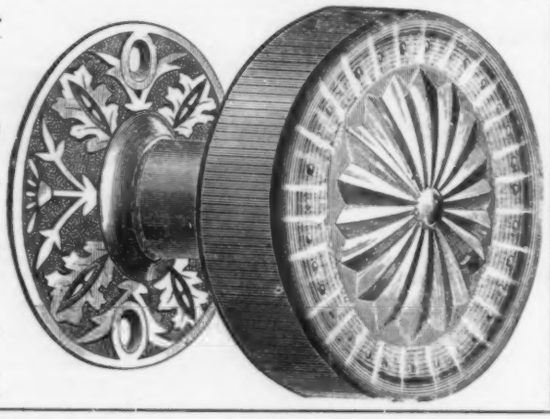
They Shine all Night.

LUMINOUS
Hemacite Door-Knobs,

Patented March 6, 1883.

ADDRESS
DIBBLE MFG. CO.,
Trenton, N. J.,
OR
NASHUA LOCK CO.,
Boston and Chicago.

Write for Illustrated List—FREE.



Winckelmann's History of Ancient Art.

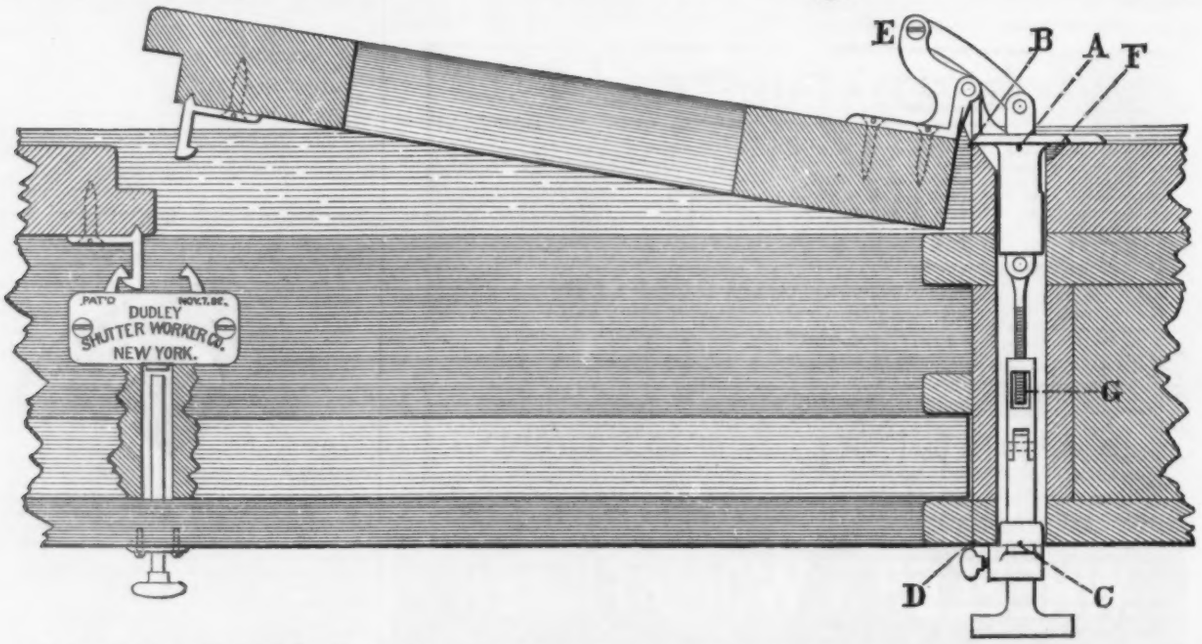
Translated from the German by Dr. G. H. Lodge. Two volumes. 8vo. $9.00.

A new and cheaper edition of this unique classic with 75 fine copper-plate engravings. Winckelmann has been translated into five languages, as the most important work on ancient æsthetics, and the copious annotations of various German, Italian, and English critics are attached to the new Boston edition. The fine arts of ancient Greece and Italy are described with luminous precision, and with a multitude of details of fascinating interest.

"Winckelmann's style resembles an ancient work of art. Each thought steps forth, fashioned in all its parts, and stands there, noble, simple, lofty, complete: it is."—*Herder.*

J. R. Osgood & Co., 211 Tremont St., Boston.

The Dudley Shutter-Worker & Burglar-Proof Lock.



The attention of architects, builders, and house owners is called to the only practical fixture for opening and closing outside-blinds, from within the house, without raising the windows or removing window-screens. With each set of fixtures is furnished all the iron-ware necessary for hanging a pair of blinds. The hinges are the strongest and most durable of any in the market, they and all other parts of the fixture are made of maleable-iron and subjected to a process which renders them rust-proof. They can be applied to blinds already hung, as well as to new work.

For full information apply to

THE DUDLEY SHUTTER-WORKER AND BURGLAR-ALARM COMPANY,
Rooms 105 and 106 Temple Court, 5 Beekman Street - - . NEW YORK CITY.

F. H. Short, three-st'y brick dwell., cor. George and Mound Sts.; cost, $5,500.

J. H. Engbers, three-st'y brick dwell., Dandridge St.; cost, $5,500.

Frank Grevor, three-st'y brick dwell., 335 and 337 West Ninth St.; cost, $10,000.

Wm. Glenn, five-st'y brick dwell., 173 Longworth St.; S. Hannaford, architect; cost, $8,000.

E. & F. B. Shaddinger, four-st'y brick tenement, cor. Pearl and Ludlow Sts.; cost, $10,000.

Jacob Magley, two-st'y brick dwell., Marshall Ave.; cost, $3,000.

J. H. Kramer, three-st'y brick dwell., Dayton St.; cost, $5,000.

7 permits for repairs, costing $5,000.

Total permits to date, 462

Total cost to date, $1,735,875.

Milwaukee, Wis.

BUILDING PERMITS. — Dwell.; cost, $3,900, for Julius Roche, on the east half of lot 16, block 79, Sixth St., Fourth Ward.

Factory; cost, $2,500, for F. Mayer, on lot 6, block 2, Walnut St., Sixth Ward.

Frame building, costing $2,500, for Mrs. C. Kurtz, on lot on the north part of lot 1, block 196, Chestnut St., Second Ward.

Frame building, costing $3,000, for J. C. Stamm, on the s w cor. Lapham and Clinton Sts., Twelfth Ward.

Frame office for Sanger, Rockwell & Co., costing $2,500, on the n w cor. of Sixth Ave. and Park St.

New York.

COMPETITIONS. — The Mercantile Exchange have decided to adopt the plans of Mr. Thos. R. Jackson for their new building.

The competition for the Brooklyn Hall of Records will not be decided before September.

The plans of Messrs. C. W. Romeyn & Co., of this city, were accepted for the Oxford Club, Brooklyn.

FLATS. — On the n s of Eleventh St., between Second and Third Aves., 3 six-st'y flats, two 40′ x 85′ and one 27′ x 85′, are to be built for the Stuyvesant Estate, from designs of Mr. Arthur Crooks.

HOOK-AND-LADDER HOUSE. — For the Fire Department a six-st'y fire-proof building 25′ x 100′, of brick, stone and iron, is to be built on the n s of Sixty-seventh St., near Third Ave., from designs of Messrs. N. Le Brun & Son.

SCHOOLS. — Three new school-houses are to be erected by the Board of Education: one on Seventieth St., cor. First Ave.; one on One Hundred and Tenth St., near Third Ave.; and the other at No. 7 West Tenth St.

BUILDING PERMITS. — *One Hundred and Thirty-ninth St.*, n s, 100′ w Willis Ave., four-st'y brick and brown-stone tenement, tin roof; cost, $9,000; owner, Harriet Kusche, 346 East Eighty-fifth St.; architect and builder, Wm. Kusche.

West Fortieth St., No. 343, five-st'y brick tenement, tin roof; cost, $18,000; owner, Mrs. Ellen Fallon, 341 West Fortieth St.; architects, H. Kafka & Co.; builder, Thos. Brennan.

Fiftieth St., Nos. 520 *and* 522, s s, 275′ w Tenth Ave., 2 five-st'y brick and brown-stone tenements, tin roofs; cost, each, $17,500; owner, John W. Smith, 1579 Park Ave.; architect, W. R. Smith.

Mercer St., Nos. 221 *and* 223, three-st'y brick factory, tin roof; cost, $5,000; owners, R. & O. Goelet, Fifth Ave., s e cor. Forty-eighth St.; architect, P. M. McCormack; builder, M. Reid.

West Forty-third St., No. 444, five-st'y brown-stone tenement, tin roof; cost, $15,000; owner, Rosa Jordan, 446 West Forty-third St.; builder, J. Jordan.

Ninth Ave., s e cor. Forty-eighth St., 2 five-st'y brick and brown-stone stores and tenements, tin roofs; cost, corner $30,000 and other $15,000; owners, Louis K. and Louis Ungrich, 160 West Thirty-third St.; architect, M. L. Ungrich.

Twelfth Ave., s e cor. Thirty-fourth St., one-st'y brick storage-building, tin roof; cost, $15,000; owner, B. Beinecke, 47 East Seventy-eighth St.; architects, Schwarzmann & Buchman; builders, M. Eidlitz & Son.

Reade St., No. 127, five-st'y brick store, tin roof; cost, $14,000; owner, Thomas Wright, 19 Chambers St.; builders, F. & W. E. Bloodgood and H. M. Smith & Son.

Reade St., No. 139, five-st'y brick store, tin roof; cost, $13,000; owner, Samuel W. Perkins, 190 Washington St.; builders, same as last.

South Fifth Ave., Nos. 38 *and* 40, w s, 125′ n Bleecker St., six-st'y brick storage, tin roof; cost, $22,000; owner, Gerolano Cella, 25 Wooster St.; builders, J. V. Close & Bro.

Greenwich St., e s, from Debrosses to Watts St., 6 six-st'y brick and stone stores, tin roofs; cost, from $180,000 to $200,000; owner, Henry Welsh, 123 Waverly Pl.; architect, Geo. W. da Cunha.

Willis Ave., n e cor. One Hundred and Forty-fourth St., four-st'y brick tenement, tin roof; cost, $12,500; owner, Christian Rieger, One Hundred and Forty-fourth St., cor. Willis Ave.; architect, A. Pfeiffer.

Fiftieth St., s s, 300′ w Tenth Ave., 2 five-st'y brick tenements, tin roofs; cost, each, $17,000; owner, Michael Whelan, One Hundred and Thirty-eighth St., cor. Southern Boulevard; architect, Chas. Baxter.

East Twenty-sixth St., No. 307, five-st'y brick tenement, tin roof; cost, $15,000; owner and builder, Joseph Johnston, 475 Second Ave.; architect, Julius Boekell.

Second Ave., s e cor. Thirty-eighth St., five-st'y brick flat and store, tin roof; cost, $24,000; owner, Christian Stoehr, 710 Second Ave.; architect, Jobst Hoffman.

East Broadway, No. 110, and *Division St., No.* 101, 2 five-st'y brick tenements, tin roofs; cost, each, $11,200; owner, Francis A. Lawrence, 257 Fifth Ave.; architect, James Stroud; builders, Samuel Lowden and Erskine & Macbeth.

West Fourteenth St., No. 59, four-st'y brick and iron store, tin roof; cost, $20,000; owner, Scotch Presbyterian Church, Wm. C. Hunter, Chairman Building Committee, 255 Sixth Ave.; architect, Samuel A. Warner; builders, Samuel Lowden and David Hepburn.

Sixty-seventh St., n s, 75′ w Tenth Ave., five-sty, brick tenement, tin roof; cost, $15,000; owner, Julius Johnson, 101 East One Hundred and Nineteenth St.; architect, J. H. Valentine.

Sixty-seventh St., 100′ w Tenth Ave., five-st'y brick tenement, tin roof; cost, $20,000; owner and architect, same as last.

One Hundred and Twenty-sixth St., n s, 410′ w Fifth Ave., 5 three-st'y and basement brown-stone front dwells., tin roofs; cost, each, $20,000; owner and builder, C. E. Vantassel, Yonkers; architect, J. H. Valentine.

Macdougal St., No. 50, five-st'y brick tenement, tin roof; cost, $16,000; owner, Mary O'Hare, 219 East Seventy-fifth St.; architect, J. H. Valentine.

Broome St., No. 480, six-st'y brick store, tin roof; cost, $28,500; owners, Isaac Steuerman, 665 Lexington Ave., and Lewis Caspar, 114 East Seventy-second St.; architect, Rich. Berger.

Third Ave., e s, 25′ 8″ n Eighty-eighth St., 4 five-st'y brick tenements, tin roofs; cost, each, $13,000; owner, John H. Gray, 140 East Eighty-seventh St.; architect, John McIntyre.

Ninth Ave., w s, 50′ s Forty-eighth St., five-st'y brick flat, tin roof; cost, $25,000; owner, Wm. C. Morgan, 703 Ninth Ave.; architect, Geo. B. Pelham.

West Forty-eighth St., Nos. 334 *and* 336, 2 five-st'y brown-stone front flats, tin roofs; cost, total, $45,000; owner, John Strobel, 330 West Forty-eighth St.; architect, Jos. M. Dunn.

Monroe Ave., w s, 100′ n Columbia Ave., 3 two-st'y frame dwells., tin roofs; cost, total, $5,000; owner, Margaret Stonebridge, 1162 North Third Ave.; builder, Chas. Eddy.

Ave. A, n e cor. Fifty-fifth St., 4 five-st'y brick tenements, tin roofs; cost, each, $11,000; owner, George W. Totten, Courtland, N. Y.; architects, A. B. Ogden & Son.

One Hundred and Fiftieth St., s s, 85′ 4″ e Railroad Ave., three-st'y frame tenement, tin roof; cost, $2,500; owner, John Flearly, 1475 Lexington Ave.; architect, F. S. Barus.

West Thirty-third St., No. 133, two-st'y brick carriage-house, tin roof; cost, $7,000; owner, Edward J. King, 357 Fifth Ave.; architects, D. & J. Jardine.

Eleventh Ave., Nos. 708 *and* 710, and *West Fiftieth St., Nos.* 550, 551, 553, 555 *and* 557, 7 five-st'y brick tenements and stores, tin roofs; cost, total, $91,000; owner, Rosalie Steinhardt, 49 West Fifty-seventh St.; architect, Judson Lawson.

West Thirty-fourth St., No. 141, five-st'y brown-stone front dwell., tin roof; cost, $17,000; owners, Benj. B. Aycrigg and others; architect, Henry F. Kilburn, 229 Broadway.

One Hundred and Eighteenth St., n s, 457′ e Ave. A, five-st'y brick tenement and store, tin roof; cost, $25,000; owner, Kate C. Kennelly, 58 West Forty-seventh St., and John W. Wood, 224 East One Hundred and Eighteenth St.; architect, M. V. B. Ferdon; builder, John W. Wood.

Seventy-second St., n s, 76′ 6″ e First Ave., 2 three st'y brown-stone front dwells., tin roofs; cost, each, $9,000; owners, Ph. and Wm. Ebling, St. Ann's Ave., cor. One Hundred and Fifty-sixth St.; architects, A. Pfund & Son.

Norfolk St., No. 73, five-st'y brick tenement, tin roof; cost, $18,000; owners, Harris and J. Silbermann, 79 Canal St.; architect, Jobst Hoffmann.

ALTERATIONS. — *Fifth Ave., No.* 329, front and interior alterations; cost, $8,000; owner, Caroline M. Packer, 8 East Forty-eighth St., treasurer, etc.; architect, Bruce Price; builder, J. H. L'Hommedieu.

West Forty-eighth St., No. 23, two-st'y brick extension, tin roof, interior alterations; cost, $4,000; owner, Chester Griswold, 13 West Forty-seventh St.; architects, Lamb & Rich; builders, Van Dolsen & Arnott and Jeans & Taylor.

Fifth Ave., No. 306, first st'y and basement altered for business purposes, new store front; cost, $3,000; lessee, Henry Walter, 172 Fifth Ave.; architect, Emile W. Granert.

Rivington St., No. 258, raise one-st'y, front; cost, $4,000; owner, Chas. H. Cranichfelt, on premises; architect, E. W. Greis.

Third and Fourth Aves., Seventh and Eighth Sts., Cooper Institute, internal and external alterations; cost, $50,000; owners, Trustees of Cooper Institute, on premises; architect, Leopold Eidlitz; builder, James Smith.

Philadelphia.

SUNDAY-SCHOOL BUILDING. — The ceremony of laying the corner-stone of the new Sunday-school building of the Presbyterian Church of the Atonement, Wharton St., above Broad, was performed June 23. The new building will be two stories high, of brick, with a brown-stone front, to correspond with the appearance of the church.

BUILDING PERMITS. — *Thirty-sixth St.*, s of Lancaster Ave., three-st'y dwell.; 16′ 6″ x 40′; A. B. Thomas, owner.

Effingham St., cor. Dickinson St., one-st'y chapel, 37′ x 60′; H. M. Martin, contractor.

Marshall St., n of Diamond St., three-st'y stable, 30′ x 40′; H. M. Martin, contractor.

Ruan St., bet. Main and Franklin Sts., two-st'y addition to factory, 30′ x 45′; Jas. Banister, owner.

Germantown Ave., s of Erie Ave., three-st'y dwell., 18′ x 48′; Benj. Walker, contractor.

Tenth St., s of Tioga St., two-st'y dwell., 18′ x 42′; Benj. Walker, contractor.

Kensington Ave., n of Russell St., two-st'y store and dwell., 19′ x 53′; A. Dieterich, owner.

Park Ave., n of Berks St., 2 three-st'y dwells., 18′ x 62′; C. E. Coulston, owner.

Wylie St. Nos. 1708 *and* 1710, two-st'y factory, 32′ x 40′; Geo. F. Payne & Co., contractors.

Susquehanna Ave., bet. Twenty-seventh and Twenty-eighth Sts., two-st'y dwell., 18′ x 55′; W. F. Albrecht.

Royal St., s of Manheim St., 2 two-st'y dwells., 15′ x 40′; J. T. Eldridge, contractor.

Greenwood St., w of Weccacoe Ave., two-st'y dwell., 15′ x 30′; Valentine Lent, contractor.

Howard St., n of York St., three-st'y dwell., 18′ x 47′; Dan'l Nevling, contractor.

Price St., bet. Evans and Hancock Sts., three-st'y parochial building, 57′ x 147′; T. W. Wright & Son, contractors.

Palmer St., e of Tulip St., one-st'y factory, 33′ x 60′; J. McCarthy, contractor.

York St., cor. Sepriva St., three-st'y dwell., and one-st'y office, 22′ x 67′; W. E. Huston, contractor.

Market St., No. 830, two-st'y addition to store, 22′ x 65′; Yarnall & Cooper, contractors.

Sprague Ave., w of Duy's Lane, two-st'y dwell., 16′ x 30′; McLaughlin & McNamara.

Thirty-first St., cor. Gray's Ferry Road, one-st'y chemical building, 63′ x 150′; Kalian Chemical Co.

Trenton Ave., above Clearfield St., 2 two-st'y dwells., 15′ x 28′; Wm. Bartholomew.

Elm Ave., cor. Montgomery Ave., two-st'y station and dwell., 26′ x 54′; Chas. D. Supplee, contractor.

Twenty-first St., s of Ontario St., two-st'y dwell., 15′ x 42′; Daniel McNeil, owner.

Terrace St., bet. Myrtle St. and Shur's Lane, two-st'y dwell., 18′ x 32′; Jno. Gibbons, owner.

Twenty-first St., n of Chestnut St., three-st'y dwell., 16′ x 74′; L. Koder, contractor.

Nicetown, one-st'y paint works, 60′ x 143′; Wm. V. Wright, owner.

Snyder Ave., w of Seventh St., two-st'y dwell., 16′ x 52′; Jno. F. Gaul, contractor.

Eleventh St., n of Indiana Ave., two-st'y dwell., 16′ x 38′; Jos. Miller, contractor.

Green St., bet. Third and Fourth Sts., 8 three-st'y dwells., 15′ x 56′; Anderson & Wilson, contractors.

Sartain St., n of Poplar St., three-st'y dwell., 18′ x 35′; Samuel Kutz, contractor.

Chestnut St., No. 3703, three-st'y brick building, 29′ x 44′; A. H. Williams, contractor.

Germantown Ave., cor. Mehl St., two-st'y chapel, 30′ x 52′; W. Garvin, contractor.

Meehan Ave., w of Chew St., 2 two-st'y dwells., 16′ 6″ x 46′; W. Garvin, contractor.

Leiper St., n of Arratt St., 3 three-st'y dwells., 18′ x 55′; Jno. Cairs, contractor.

St. Louis.

BUILDING PERMITS. — Sixty-four permits have been issued since our last report, forty-eight of which are for unimportant frame houses. Of the rest, those worth $2,500 and over are as follows: —

Isidor Schaillort, two-st'y mansard roof, brick dwell.; cost, $4,200; F. Wamhoff, contractor.

Jno. Mahon, two-st'y brick dwell.; cost, $8,000; J. B. Legg, architect; J. Mahon, contractor.

L. Bernheimer, two-st'y brick dwell.; cost, $8,760; A. Grable, architect; Goesse & Remmers, contractors.

Joseph Murphy, 3 adjacent two-st'y brick tenement houses; cost, $6,000; J. E. Johnstone, architect; Goesse & Remmers, contractors.

Joseph Murphy, 3 adjacent two-st'y brick tenement houses; cost, $3,000; J. E. Johnstone, architect; Goesse & Remmers, contractors.

Mathias Hasbeck, two-st'y brick dwell.; cost, $2,500; Franz Mueller, contractor.

St. John E. Luth. Cong., one-st'y brick church; cost, $5,500; A. Grable & Co., architect; J. E. Schubert, contractor.

J. Levy, two-st'y mansard roof, brick dwell.; cost, $3,600; Mark & Son, contractors.

S. A. Clairmant, two-st'y brick dwell.; cost, $3,000; J. Castelo, contractor.

C. J. Stifel, 4 adjoining brick tenement houses; cost, $9,000; A. Beinke & Co., architects; H. Bauns, contractor.

Mrs. Hufnagel, two-st'y brick dwell.; cost, $3,000; Chas. E. Illsley, architect; Remmers & Thompson, contractors.

R. Neumeyer, two-st'y mansard roof dwell.; cost, $3,000; F. Knittel, contractor.

E. C. Robbins, two-st'y brick dwell.; cost, $6,000; sub-let.

St. Louis M. H. Building Co., No. 3, two-st'y brick dwell.; cost, $3,500; E. Mortimer, architect; M. B. Scanlan, contractor.

St. Louis M. H. Building Co., No. 3, two-st'y brick dwell.; cost, $3,200; E. Mortimer, architect; J. V. Mayors, contractor.

St. Louis M. H. Building Co., No. 3, two-st'y brick dwell.; cost, $3,200; E. Mortimer, architect; J. V. Mayors, contractor.

C. Hunt & Turner Estate, tearing down; cost, $3,000; R. P. McClure; cost, $3,000; R. P. McClure, contractor.

Mrs. Koch, two-st'y mansard roof, brick dwell.; $5,000; A. Uhri, contractor.

John T. Dozier, two-st'y brick dwell.; cost, $3,800; J. W. Barnes & Co., contractors.

General Notes.

CAMBRIDGEPORT, MASS. — The corner stone of the Odd Fellow's Hall, on Main street, was laid June 17. H. H. Richardson, architect, Brookline, Mass.

ELIZABETH, N. Y. — Work has been begun on the new Presbyterian Church in Madison ave.

HUNTER'S POINT, N. Y. — The Congregation of St. Mary's Roman Catholic Church are going to build a new church on Vernon Ave., of stone or brick, at a cost of $60,000.

KANSAS CITY, MO. — J. F. Wright, stores, Peery place, $4,500.

LANCASTER, PA. — The site for a crematory just outside of this city has been secured.

MAHANOY, PA. — Some time ago the School Board of Mahanoy City gave out the contracts for the building of a $15,000 school-house in the place of the one now occupied. A number of citizens protested against the proposed building, and obtained an injunction restraining the work. The matter was recently heard by the Court, and lately Judge Bechtel filed an opinion, Judge Pershing concurring, in which the injunction was dissolved. The School Board will at once proceed to tear down the old building and put up a new one.

MEDIA, PA. — In the *American Architect* for June 14th, '84, Messrs. Dury and Keerl, of Philadelphia, are credited with the authorship of the plans and drawings upon which the present alterations in the Media Baptist Church are based. The drawings are all made by Silas Gravelle, architect.

NEAR GOVANSTOWN, MD. — Lawrence Turnbull, Esq., is to build a brick and frame cottage on the York Road, near this place, 50′ x 60′, two-story and attic, to cost $6,000, from design by J. A. & W. T. Wilson, architects, Baltimore.

NYACK, N. Y. — At the special school meeting held here to vote upon the question of building an addition to the public school-house, it was decided to begin work very soon. The addition is to cost $12,000.

PLYMOUTH, N. H. — The corner stone of Holy Cross Chapel, the new chapel to be erected at the Holderness School for boys, through the generosity of a young New York lady, was laid June 16.

PROVIDENCE, R. I. — A project is on foot for a new gymnasium for Brown College. A committee of ten has been formed to raise subscriptions. It is expected that the building and equipments will cost from $70,000 to $80,000.

It is stated that the gentleman who proposed to give Brown University $20,000 for an observatory, is Dr. Wm. Grovesnor, of Providence.

SAG HARBOR, L. I. — Plans have been prepared for a new Episcopal Church in this village. At a meeting of the vestry of Christ's Church the plans submitted were adopted, and work will be begun as soon as necessary preparation can be made.

ST. PAUL, MINN. — Mathias Iten, 3-story brick, double stores and dwells., 20′ x 44′, on the east side of Dakota avenue, between Fillmore avenue and Mill street, $12,000.

Isaac St. Peter, 2-story frame dwell, 28′ x 36′, on the west side of Stryker avenue, between Terrace and Colorado streets, $3,000.

John Wann, additional story to 3-story brick block, 45′ x 95′, on the east side of Sibley street, between Fourth and Fifth streets, $3,000.

SUFFOLK, VA. — Passenger station for the Seaboard and Roanoke Railroad, of brick, 28′ x 75′, to cost $5,000; and frame freight shed, 26′ x 80′ for same road,

PUBLISHERS' DEPARTMENT.

The AMERICAN ARCHITECT and BUILDING NEWS

Published Every Saturday by

JAMES R. OSGOOD & CO.,

211 TREMONT ST., BOSTON, MASS.

BRANCH OFFICE: 658 BROADWAY, NEW YORK.

Price. — Weekly, Per year in advance $6.00
" " half-year in advance 3.50
Monthly numbers, per year in advance 1.75
" " half-year " " 1.00
Single copies .15

Past Issues.	Unbound.	Bound.
1876, '77, '78, '79 per volume,	$9.00	$10.50
1882, '83 " "	7.50	9.00

Binding. — In maroon cloth with stamped back and side $1.00 per yearly volume. Similar covers supplied at $1.00 each.

N. B. We do not exchange bound for unbound volumes however perfect they may be.

Remittances. — Remittances should be made by check, draft or postal money-order.

Changes of Address. — Requests to change the address of a paper should mention both new and old addresses.

Specimen Copies furnished on the receipt of fifteen cents.

Advertising Rates furnished on application.

"Wants," and "Proposals," 15 cents a line.

Advertisements not received later than Thursday noon.

Discontinuances. — The courts invariably hold a subscriber responsible to the publisher for the subscription price of all papers received by him until arrearages are paid, and the paper ordered to be discontinued.

Drawings returned uninjured after publication.

WARNING.

Any one paying money for his subscription to any Agent does so at his sole risk.

NOTICE.

The *American Architect* can be obtained, *flat*, and subscriptions made at the following places.

BOSTON: —
James R. Osgood & Co., 211 Tremont St.
Cuppies, Upham & Co., cor. Washington and School Sts.
Old Colony R. R. News Stand.
Providence Station News Stand.

BUFFALO, N. Y.: —
A. J. Hawks.
Peter Paul & Co.

CLEVELAND, O.: —
Van Epps & Co.

CHICAGO, ILL.: —
Pierce & Snyder, 122 Dearborn St.
J. W. Taylor, 146 La Salle St.

DETROIT, MICH.: —
K. T. Ives, 16 Baldwin Place.

NEW YORK: —
Brentano's Literary Emporium, 5 Union Sq.
W. T. Comstock, 6 Astor Place.
C. L. Webster, 658 Broadway.

CINCINNATI, O. —
Thomas Morton, 162 Vine St.

PHILADELPHIA: —
Ryan's Post-office News Stand.

PITTSBURGH, Pa. —
R. S. Davis & Co.,
W. W. Edgar,

ROCHESTER, N. Y.: —
Scrantom, Wetmore & Co.
C. E. Darrow.

ST. LOUIS, MO.: —
Philip Roeder, 322 Olive Street.

New Advertisements.

OXLEY, GIDDINGS & ENOS (New York, N. Y.), Gas-Fixtures. Page i.
MISS MARY SEYMOUR (New York, N. Y.), Typewriting. Page xiv.
NATIONAL WIRE & IRON CO. (Detroit, Mich.), Wire and Iron Work. Page xvi.
BODINE ROOFING CO. (Mansfield, O.), Roofing. Page xviii.

BUILDING INTELLIGENCE.

from designs by J. A. & W. T. Wilson, architects, Baltimore.

TOPEKA, KAN. — The corner-stone of a new Presbyterian Church was laid May 24.

VANCEBORO, ME. — Vanceboro is to have a new Custom-House, to be of wood, two-st'y, with hipped roof, and of the dimensions of 35′ x 50′.

VANCOUVER, W. T. — D. McKay, has prepared plans for a Catholic Church, costing $30,000; Scharns & Davidson, contractors.

WHITE PLAINS, N. Y. — W. A. Smith has begun the erection of a cottage on the lot of J. J. Knapp, on Lexington Avenue.

WORCESTER, MASS. — The Unitarians propose to build a new church on the present site, the structure to cost $30,000.

YONKERS, N. Y. — Work has begun on the new temperance hall, Mr. H. C. Barnes having the contract.

For Mr. J. N. Bangs three dwellings, and for Mr. A. Curtis one, are to be built from designs of Mr. Hy. Rutgers Marshall, of New York.

PROPOSALS.

PAVING BLOCKS. [At Washington, D. C.]

OFFICE OF THE ENGINEER COMMISSIONER, WASHINGTON, D. C., June 23, 1884.

By direction of the Board of Commissioners, sealed proposals will be received at this office **until 12 o'clock, M., on Tuesday, July 8, 1884,** for furnishing 550,000, more or less, granite or trap-rock blocks, to be delivered at Washington, D. C.

Blank forms of proposal and specifications can be obtained at this office upon application therefor, together with all necessary information, and bids upon these forms will alone be considered.

The right is reserved to reject any and all bids or parts of bids.

G. J. LYDECKER,
Major of Engineers, U. S. A.,
445 Engineer Commissioner, D. C.

WANTED.

Back Numbers of the American Architect.

We shall be under obligations to any one who can furnish us with the following copies of the *American Architect:* —

No. 215, February 7, 1880.

For this number we will pay 50 cents per copy.

PROPOSALS.

BRIDGE MASONRY. [At Columbia, O.]

COUNTY AUDITOR'S OFFICE, HAMILTON COUNTY, OHIO, CINCINNATI, June 17, 1884.

Sealed proposals will be received at the office of the County Commissioners **until Wednesday, July 16, 1884, at 12 o'clock M.**

For the masonry and approaches to a bridge over Duck Creek, on the road from Red Bank to Madisonville, in Columbia Township.

To be built according to plans and specifications now on file in County Commissioners' office.

The Commissioners reserve the right to reject any or all bids.

By order of the Board of County Commissioners.

JOSEPH W. BREWSTER,
446 County Auditor.

TERRA-COTTA PIPE. [At Washington, D. C.]

OFFICE OF THE ENGINEER COMMISSIONER, WASHINGTON, D. C., June 23, 1884.

By direction of the Board of Commissioners, sealed proposals will be received at this office **until 12 o'clock, M., on Tuesday, July 8, 1884,** for furnishing and delivering in Washington, D. C.

36,000 feet 12-inch terra-cotta pipe.
12,600 feet 15-inch terra-cotta pipe.
31,500 feet 21-inch terra-cotta pipe.
7,000 feet 24-inch terra-cotta pipe.
500 feet 6 x 12-inch terra-cotta branches.
50 feet 6 x 15-inch terra-cotta branches.
800 feet 6 x 18-inch terra-cotta branches.
250 feet 6 x 21-inch terra-cotta branches.
350 feet 6 x 24-inch terra-cotta branches.
750 feet 6-inch terra-cotta junction blocks.

Blank forms of proposals and specifications can be obtained at this office upon application therefore, together with all necessary information, and bids upon these forms will alone be considered.

The right is reserved to reject any and all bids or parts of bids.

G. J. LYDECKER,
Major of Engineers, U. S. A.,
445 Engineer Commissioner, D. C.

THE PERMANENT

EXHIBIT & EXCHANGE

Of Building Materials and Improvements.

Open free to the Public every business day of the year.

N. E. cor. Wabash Av. and Washington St., CHICAGO.

Architects and visitors interested in building, from all parts of the country, are particularly invited to make this establishment their headquarters. Information and assistance will be extended to them, and use of writing and reading rooms gratis.

Visitors' Correspondence may be addressed in care of this establishment.

HENRY LORD GAY, Proprietor. T. S. HOTCHKISS, Manager.

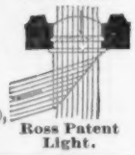
This Cut Shows our Patent Three-bar Chilled Process, used in the manufacture of our **Composite Railings, Gates, etc.** The horizontal, as well as the upright rods, are in one piece, and the molten metal is poured and chilled on to the wrought-iron, making a perfect joint, which is equal to a solid weld. It leaves no crevices for rust or moisture to enter. We have over 100 designs of Railings, Gates, etc., made by this process. Our prices are as low as the same quality of work in cast or wrought-iron, but our Composite Work will out-last either. Specimens can be seen all over the country, but especially on the Elevated Railroad stations and the East River bridge.

COMPOSITE IRON WORKS, 83 Reade Street, N. Y.

Sidewalk —AND— VAULT LIGHTS.

Sole Manufacturers of the

FLOOR and ROOF LIGHTS.



Ross Patent Light.

DAUCHY & CO.,

125 & 127 Indiana St., (near Wells),

CHICAGO, ILL.

H.W. JOHNS' ASBESTOS

STEAM PIPE AND BOILER

COVERINGS

Steam Packing, Millboard, Sheathing, Building Felt, Liquid Paints, Roofing, &c.

DESCRIPTIVE PRICE LIST AND SAMPLES SENT FREE.

H. W. JOHNS MFG. CO., 87 Maiden Lane, N. Y.

ARCHITECTS

can dictate specifications at our offices to Stenographers or Type-writers familiar with architectural terms.

Accurate copies made on the

REMINGTON TYPE-WRITER.

Send for circular.

MARY SEYMOUR, 239 Broadway.

MAIL CHUTES.

IMPORTANT

To ARCHITECTS and OWNERS.

THE CUTLER MANUFACTURING CO.,

ROCHESTER, N. Y.,

SOLE MAKERS of LETTER BOX CONNECTIONS, under the original Patents of Sept. 11, 1883.

Send for Descriptive Circulars.

PROPOSALS.

PLASTERING. [At Kansas City, Mo.]

OFFICE OF SUPERVISING ARCHITECT, TREASURY DEPARTMENT, WASHINGTON, D. C., June 26, 1884.

Sealed proposals will be received at this office **until 2 P. M., on the 17th day of July, 1884,** for all the plastering required in the custom-house and post-office building at Kansas City, Mo., in accordance with drawings and specifications, copies of which and any additional information may be had on application at this office or the office of the Superintendent.

Bids must be accompanied by a certified check, and those received after the time of opening will not be considered.

M. E. BELL,
446* Supervising Architect.

SEWER. [At Kansas City, Mo.]

CITY ENGINEER'S OFFICE, KANSAS CITY, MO., June 26, 1884.

Sealed proposals will be received by the undersigned at this office **until 12 o'clock, noon, of Saturday, July 12, 1884,** (at which time bids will be opened), for furnishing all the materials, and doing all the work necessary to complete the following city improvements, viz.: Constructing district sewer in sewer district, No. 53. Plans and specifications may be seen, and all information relative to the work obtained at this office. Payment for the work to be made by the issue of special tax-bills. No proposal from any contractor in default with the city on any previous contract will be considered. No proposal will be considered unless a cash deposit of two hundred ($200) dollars has been previously made with the city comptroller, and his certificate thereof accompanies the bid.

The right is reserved to reject any or all proposals.

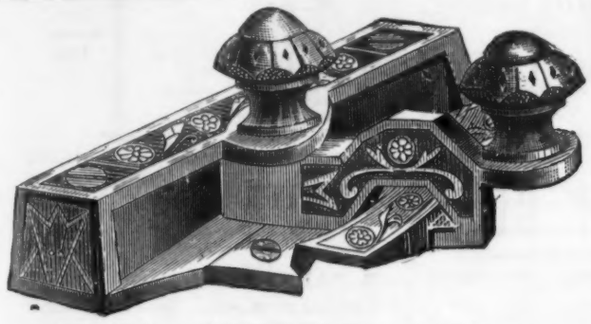
445 WM. B. KNIGHT, City Engineer.

SOAPSTONE FINISH.

Superior to Plaster or Sand Finish, for Walls and Ceilings. Send for Circular.

AMERICAN SOAPSTONE FINISH COMPANY,

P. O. BOX 35, PROVIDENCE, R. I.



Full-size Cut of No. 190, Broughton's Burglar-Proof Sash-Lock.

Manhattan Hardware Co.,

READING, PA., U. S. A.

MANUFACTURERS OF

Specialties in Builders' Hardware.

BROUGHTON'S

Burglar-Proof Sash-Locks,

Patented, Oct. 8, 1879.

No.	Price per doz.	No.	Price per doz.	No.		Price per doz.	No.		Price per doz.
1	$.40	20	$.85	45	Nickel	$2.50	155	Real Bronze	$8.00
2	.50	25	.90	50	"	3.00	165	" "	8.50
6	.60	30	.95	55	Brass	6.00	175	" "	9.00
7	.70	35	1.00	65	"	6.50	190	" "	10.00
10	.75	40	2.00	75	"	7.00		Trade discount, 33⅓%.	

PROPOSALS.

HOSPITAL FOR THE INSANE,
[At Middletown, Conn.]

Sealed proposals will be received **until the 12th day of July, Saturday, at 10 o'clock,** A. M., for mason work of the proposed new hospital extension at Middletown, Conn. The contractor to supply all materials for this work, and to enter into obligations to finish the same within a specified time which he is to designate; and to furnish good and sufficient bonds for the faithful performance of the work.

Plans and specifications can be seen at the hospital.

The Committee reserve the right to reject any or all bids not in the interest of the State.

Address "Secretary Building Committee, Hospital for Insane, Middletown, Conn." 445

IRON BRIDGE.
[At Columbia, O.]

COUNTY AUDITOR'S OFFICE,
HAMILTON COUNTY, OHIO,
CINCINNATI, June 17, 1884.

Sealed proposals will be received at the office of the County Commissioners **until Wednesday, July 16, 1884, at 12 o'clock** M., for an iron superstructure over Duck Creek, on the road from Red Bank to Madisonville, in Columbia Township.

To consist of one span of 70 feet, with clear roadway of 20 feet.

To be built according to plans and specifications on file in County Commissioners' office.

The Commissioners reserve the right to reject any or all bids.

By order of the Board of County Commissioners.
JOSEPH W. BREWSTER,
446 County Auditor.

SCHOOL-HOUSE ADDITION.
[At Millcreek, O.]

Sealed proposals will be received at the office of Edwin Buddemeyer, architect, 163 Central Ave, Cincinnati, O., **until 12 o'clock,** M., **of the 9th day of July,** A. D., **1884,** for the erection and entire completion of a two-st'y addition to a school-house at Bond Hill, Oakland Special School District No. 7, Millcreek Township, Hamilton County, O., according to the plans and specifications on file in said office. The entire work to be let as a single contract.

Each bid shall contain the name of every person interested in the same, and shall be accompanied with a sufficient guarantee of some disinterested person that if the bid be accepted a contract will be entered into and the performance properly secured.

The Board reserves the right to reject any or all bids.

The plans and specifications are on file in the office of Edwin Buddemeyer, architect, 163 Central Ave., Cincinnati, O. JACOB PEAK, Clerk. 445

BRIDGE MASONRY.
[At Nashville, Tenn.]

Sealed proposals will be received at the office of the Board of Public Works and Affairs of the city of Nashville, Tenn., **until 4 o'clock,** P. M., **Monday, July 21, 1884,** for the construction of the masonry of the highway bridge across Cumberland River at Nashville, Tenn., consisting of three (3) piers and two (2) abutments, located on site of existing Suspension Bridge.

			Height. ft.
West abutment,	6 x 48,	under coping	10
Pier No. 1,	7 x 49,	"	93
Pier No. 2,	7 x 49,	"	101
Pier No. 3,	6 x 48,	"	105
East abutment,	6 x 48,	"	50

The whole to be rock face masonry, except coping and belt course.

West abutment is founded on cliff, west bank of river.

Piers Nos. 1 and 2 are founded on rock, bottom of river.

Pier No. 3 is founded on rock, under east bank of river.

East abutment is founded on timber, resting on piles.

A small quantity of rock excavation (dry) will be necessary at west abutment.

About 23 feet excavation of earth, gravel, etc., at Pier No. 3, and about 8 feet excavation of earth at East abutment will be required. But little, if any excavation is to be expected at Piers Nos. 1 and 2.

Approximate amount of masonry 6,800 cubic yards.

Pier No. 1 is located at edge of low water.

PROPOSALS.

Pier No. 2 stands in 9 to 10 feet of water at low stage.

Pier No. 3 is 50 feet back from low water's edge, and the rock foundation is presumed to be 14 feet below the level of low water surface.

Proposals will cover the following items:—

Masonry—In piers and abutments, including cofferdams and pumping, per cubic yard.

Timber—In foundations per foot, B. M.

Piles—In foundations, per lineal foot.

Concrete—In foundations, per cubic yard.

Earth Excavation—(dry and wet) per cubic yard.

Rock Excavation—(dry and wet) per cubic yard.

Plans and specifications on file at City Engineer's office, and will be forwarded on application.

The Board reserves the right to reject any or all bids, and to waive any defect.

By order of the Board of Public Works and Affairs.
446 EDWARD MEAD, City Engineer.

Parisian Art and Artists.

By HENRY BACON. 1 vol. 8vo, $3. Profusely illustrated.

"Very delightful reading" the N. Y. *Mail and Express* calls it.

"A very bright book."—*Boston Advertiser.*

"Very pleasant reading."—*Phila. Press.*

Nantucket Scraps;

or, The Experiences of an Off-Islander, in Season and out of Season, among a Passing People. By MRS. JANE G. AUSTIN. 1. vol. 16mo, $1.50.

JAMES R. OSGOOD & CO., Publishers,
211 Tremont Street, Boston.

MODERN PERSPECTIVE.

A Treatise upon the Principles and Practise of

Plane and Cylindrical Perspectives.

—BY—

Professor WILLIAM R. WARE.

Price, $5.00.

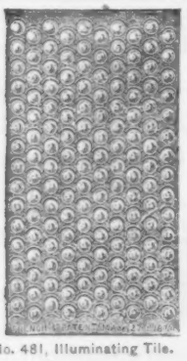
Published by JAMES R. OSGOOD & CO., 211 Tremont St., Boston.

Who will Buy?

We have *ONLY TWO* new and complete sets of the "American Architect" still in stock. The first will be sold at our regular list-price, $78.00, and the last at a premium.

JAMES R. OSGOOD & CO., Publishers,

211 Tremont Street, Boston.



No. 481, Illuminating Tile.

W. P. SUMNER, Pres. W. H. GORDON, Supt. F. R. MINCKLER, Sec'y.

NATIONAL WIRE & IRON CO.,

DETROIT, MANUFACTURERS, MICHIGAN,

No. 469, Iron Stair and Balcony Railing.

Fire-Proof Wire Lathing,

FIRE-ESCAPES,

Balconies, Iron Shutters, Iron Sash, Stable Fittings,

WEATHER VANES, Etc.

Catalogue mailed free on application.

No. 477, Iron Shutters.

No. 479, Iron Sash.

RICHARDSON & BOYNTON CO., 234 WATER STREET, N. Y.
84 LAKE ST., CHICAGO, ILL.

MANUFACTURERS OF FURNACES, HEATERS AND RANGES.

Fifty thousand of these popular furnaces in use. Established, 1849. Same address as for twenty years past. Send for Circular.

EDWARD FORD, President.
E. L. FORD, Superintendent.

JOHN F. SCOTT, Treasurer.
JAMES H. SHIELDS, Sec'y.

Pittsburgh Plate Glass Company,

OF CREIGHTON, PA. Manufacturers of

POLISHED PLATE GLASS,

SKYLIGHT AND FLOOR GLASS.

Extra Large Sizes and Wide Glass a Specialty.

Our entire Works are heated, lighted, and operated by **NATURAL GAS,** which, owing to its entire freedom from Sulphur and other impurities, and with its extraordinary heating power, enables us to produce an article of Plate Glass not surpassed by any other manufacturers.
Glass annealed by our process and with this Gas is of a superior temper, not so liable to break, and will prove more durable.

A. G. NEWMAN, late NEWMAN & CAPRON.

MANUFACTURERS OF

Fine Bronze Hardware, Bank, Office and Stoop Railings in Bronze or Brass. Antique Furniture-Trimmings. Electrical and Mechanical Bell-Hanging, Burglar-Alarms.

Warerooms, 1180 BROADWAY. Factory, 157-163 WEST 29th STREET, NEW YORK, N. Y.

"BUILDING SUPERINTENDENCE."

The best and latest treatise on American practice in building.

Clear, readable, reliable and complete. ***Price, $3.00.***

For Sale by all Booksellers.

JAMES R. OSGOOD & CO. Publishers, 211 Tremont St., Boston.

ESTABLISHED 1824

PARKER & GILLESPIE,

DECORATORS' VARNISHES & HARD OIL-FINISH. 554 WEST 25TH. ST. NEW YORK.

MEXICAN ONYX, AND RICH MARBLES.

S. KLABER & CO., Importers and Workers,
217 to 223 West 51st Street, New York.

Interior decorations made from Architects' Specifications.

Old Masters

OF BELGIUM AND HOLLAND. Translated by Mrs. Mary E. Robbins, from the French of Eugene Fromentin. 1 vol. 8vo. With 12 full-page Heliotypes. $3.

The Boston *Courier* says; "It is difficult adequately to convey a sense of the charm of this book."

The N. Y. *Star* says that "it lets the reader into the real life of the artists, into their surroundings, and even into their feelings."

PUBLISHED BY

JAMES R. OSGOOD & CO.,

211 Tremont Street, Boston, Mass.

Boynton Furnace Co. 94 Beekman St., N. Y.

MANUFACTURERS OF
BOYNTON'S LATEST PATTERN FURNACES, RANGES, AND HEATERS. (40 YEARS EXPERIENCE.)

MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

This school offers a four years' scientific and professional training for Chemists, Metallurgists Civil, Mechanical and Mining Engineers, Architects, Teachers of Science and Manufacturers.

THE COURSE IN ARCHITECTURE

Embraces, besides the necessary scientific and mathematical studies, the study of architectural history, and the constant practice of original design.

Special students in Architecture are received into a two years' special course.

F. A. WALKER, Pres't. Prof. R. H. RICHARDS, Sec.

CORNELL UNIVERSITY
DEPARTMENT OF
Architecture, Civil Engineering, Mechanic Arts.

The course in Architecture embraces the necessary scientific and mathematical studies, the history of the art, and constant practice in drawing and designing.

Persons 21 years of age, properly qualified, are received as special students, without the usual entrance examinations. For copies of the Register, giving full information, address the

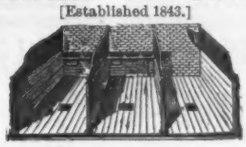
TREASURER OF CORNELL UNIVERSITY, ITHACA, N. Y.

SUPERIOR
COPPER WEATHER VANES.
Gilded with Pure Gold.

THOS. W. JONES, 170-172 Front St., Near Malden Lane, NEW YORK. Successor to Chas. C. Briggs. Successor to V. W. Baldwin.

Vanes made from any drawing or design on short notice. Illustrated Catalogue of over 200 designs mailed to any address. Mention this paper.

THE LARGEST MANUFACTURERS IN THE UNITED STATES
— OF —
STABLE FITTINGS.
[Established 1843.]



HAY RACKS, MANGERS, ETC., ETC.
☞ Send for Prices and Catalogues.
SAMUEL S. BENT & SON,
72 Beekman St., New York.

Architects, Builders, and others will confer a favor on the Publishers by mentioning "The American Architect and Building News" when sending for circulars or corresponding with parties advertising in these columns.

Universal Steam Heating Co.,

Estimates and Specifications furnished for general Steam Heating and Ventilating of Dwellings, Hospitals, Factories, Conservatories, etc

FINE DWELLINGS A SPECIALTY.

Skilled workmen under the supervision of a thorough and tried engineer. Direct and indirect warming. All work guaranteed. Cheap, safe and economical boilers and best radiators. Correspondence solicited. Address

E. T. WEYMOUTH, Consulting Engineer.

No. 13 Vandewater Street, New York City.

C. N. MARCELLUS, W. BLONDEL.

Classified Advertisements.

[Advertisers can be indexed only under a single head free of charge.]

ARCHITECTS' MATERIALS. PAGE
Albert Levy, New York ix
Keuffel & Esser, New York xxiv
E. G. Soltmann, New York ix
Wadsworth, Howland & Co., Boston ix

ARTIFICIAL LEATHER.
Evans Artificial Leather Co., Boston xi

ARTISTIC DECORATIONS.
Sypher & Co., New York i

ANNUNCIATORS.
Edwards & Co., New York iv
W. B. Ostrander & Co., New York x
Western Electric Co., New York & Chicago x

ART JOURNALS.
Decorator and Furnisher Co., New York ii
Montague Marks, New York i

ASBESTOS COVERINGS.
H. W. Johns M'f'g Co., New York xiv

ASPHALT. Henry R. Bradbury, New York xii
New York Mastic Works x

AWNINGS F. O. North & Co., Boston xi

BASIN WASTE.
H. M. Weaver, Mansfield, O xx

BELL FOUNDERS.
H. McShane & Co., Baltimore, Md ii
Vandusen & Tift, Cincinnati, O ii

BINDERS (TEMPORARY).
J. R. Osgood & Co iv

BOILERS.
Harrison Boiler Works, Philadelphia xii

BOOKS AND JOURNALS.
Wm. T. Comstock, New York ix
J. R. Osgood & Co., Boston xvi

BRASS GOODS.
Manhattan Brass Co., New York 3

BRICK (ORNAMENTAL).
Anderson Pressed Brick Co., Chicago xxii
Brick Enamelling Co., Philadelphia xxii
A. T. Chur, New York xxii
Hydraulic Press Brick Co., St. Louis xxii
Peerless Brick Co., Philadelphia xxii
Rowe & Denman, New York xxii
Waldo Bros., Boston xxiii

BUILDING PAPER.
N. Y. Coal Tar Chemical Co., New York xii
Scott Paper Co., Phila v

CARPETINGS.
J. H. Pray, Sons & Co., Boston i

CEMENT. James Brand, New York xxii
Brooks, Shoobridge & Co., New York iv
Gustav Grawitz xxii
Gabriel & Schall, New York xxii
Howard Fleming, New York xii
Johnson & Wilson, New York xxiv
Sinclair & Babson, New York, N. Y. xxii

CEMENT (SELENITIC).
Selenitic Fire-proof Building Co., Chelsea, Mass iv

CHAIR-SEATING.
Baker, Pratt & Co., New York and Phila xi
Harwood Chair Seat Co., Boston xi

CLOCKS FOR PUBLIC BUILDINGS.
E. Howard Watch & Clock Co., Boston iv
Seth Thomas, Thomaston, Conn iv

CONDUCTORS (WATER).
Austin, Obdyke & Co., Philadelphia ii
Boston Spiral Tube Works, Boston ii
Solderless Standing-Seam Conductor Co., Allegheny, Pa ii

COPPERSMITHS AND METAL-WORKERS.
G. L. Swett & Co., Boston iv

CORNICES (GALVANIZED IRON).
Bakewell & Mullins, Salem (Col. Co.), O xx
Mesker & Bro., St. Louis, Mo xix

COVERING (BOILER).
Shields & Brown, Chicago viii

DECORATIVE LEATHER.
Walker & Thompson, New York iii
C. R. Yandell & Co., New York i

DECORATORS.
P. M. Almini, Chicago iv
Cox Sons, Buckley & Co., New York ii
Haskins, Chicago iii
Healy & Millet, Chicago iii
Wm. Healy & Son, Bridgeport, Conn iii
J. Holmes, Boston iii
La Farge Decorative Art Co., New York iii
Donald McDonald, Boston iii
W. J. McPherson, Boston iii
R. Mitchell Furniture Co., Cincinnati, O 3
Frank Hill Smith, Boston iii

DOOR-KNOBS.
Dibble M'f'g Co., Trenton, N. J 4

ELEVATORS, ETC.
Elias Brewer, Boston v
Clem & Morse, Philadelphia iv
Crane, New York & Chicago i
Thos. Dyer, Philadelphia v
Eaton & Prince v
L. S. Graves & Son, Rochester, N. Y i
E. E. McCalvey, Philadelphia v
Otis Brothers & Co., New York i
Sherrill Roper Air Engine Co v
Stokes & Parrish, Philadelphia i
Sulzer & Vogt, Louisville, Ky v

ELEVATORS, ETC. (*continued.*)
Whittier Machine Co., Boston 1
Z. Wile, Boston v

ENGINES (CALORIC PUMPING).
Delamater Iron Works, New York xii

ENGINES (GAS).
Schleicher, Schumm & Co., Philadelphia xii

EXHIBITION (BUILDING).
H. L. Gay, Chicago xiv

FAUCET.
Renton Bros., New York xx

FENCING (IRON).
David Pettit & Co., Phila xviii

FIRE-PROOF BUILDING.
Fire-Proof Building Co., New York xxiii
Frank Lyons, Jr., New York xxiii
Magneso Calcite Fire-Proof Co., Boston xxiii
Henry Maurer, New York xxiii
Ottawa Tile Co., Chicago xxiii
Raritan Hollow and Porous Brick Co xxiii
Wight Fire-Proofing Co., New York xxiii

FLOORS.
National Wood M'f'g. Co., New York xxiv
Wm. Hennam & Co., New York xxiv

FLOORS (INLAID).
W. E. Wheeler, Toledo, O iv

FLOORS (WATER-TIGHT).
W. L. Dolbeare, Boston 3

FLOORS (WOODEN).
W. C. Runyon & Co., Rochester, N. Y xi

FURNITURE.
Keeler & Co., Boston xi
Sypher & Co., New York i
Tomlinson & Carsley, Chicago xi

GAS-FITTERS.
Archer & Pancoast M'f'g Co., New York xii
Mitchell, Vance & Co., New York i
Oxley, Giddings & Enos, New York i

GAS-MACHINES.
Combustion Gas-Machine Co., Detroit x
Denny Bros. & Co., New York x
Pa. Globe Gas-Light Co., Phila x
Tirrill Gas-Machine Co., New York x

GAS-STOVES.
Goodwin Gas-Stove Co., Phila vii

GAUGES. B. P. Jones, Boston, Mass viii

GLASS.
Crystal Plate-Glass Co., St. Louis, Mo ix
Pittsburgh Plate Glass Co., Creighton, Pa xvi

GLASS ROOFING.
Arthur E. Rendle, New York i

GLASS (STAINED AND ORNAMENTAL).
James Baker & Son, New York ii
A. B. H. Chapin, Boston ii
Geo. R. Clarke & Co., Boston iii
Wm. Coulter & Son, Cincinnati ii
Otto F. Falck & Co., New York ii
R. S. Groves & Stell, Philadelphia ii
H. Edgar Hartwell, New York iii
Kinsella & Haywood, Chicago ii
Kelley & Co., Boston ii
J. & H. Lamb, New York ii
S. S. Marshall & Bros., Allegheny, Pa iii
John Matthews, New York iv
McCully & Miles, Chicago iii
W. J. McPherson, Boston ii
Donald MacDonald, Boston iii
Redding, Baird & Co., Boston ii
Samuel West, Boston ii

GRATES, ETC.
J. S. Conover & Co., New York xxiv
Henry Dibblee, Chicago iii
Eureka Grate Works, Cincinnati, O iv
W. H. Harrison & Bro., Philadelphia vi
Edwin A. Jackson & Bro., New York xi
Wm. H. Jackson, New York xxiv
Open Stove Ventilating Co., New York vii

HARDWARE.
Burditt & Williams, Boston iv
Manhattan Hardware Co, Reading, Pa xv
A. G. Newman, New York xvi
Jas. W. Vinal, Boston iii

HARNESS BRACKET.
Jas. J. Read, Boston 3

HEATING APPARATUS.
Bartlett, Hayward & Co., Baltimore i
Boynton Furnace Co., New York xvii
Boynton Furnace Co., Philadelphia, Pa vii
Geo. F. Geibach, Phila vii
Richardson & Boynton Co., New York xvi

HEATING APPARATUS (STEAM).
Peter Backus, New York vi
John Davis & Co., Chicago, Ill vii
Edward E. Gold & Co., New York vii
A. A. Griffing Iron Co., Jersey City xxiv
Holland & Thompson, Troy, N. Y vi
Page Steam Heating Co., Norwich, Conn ii
E. Ratzler, New York City iii
H. B. Smith Co., New York vi
Universal Steam-Heating Co., New York vii
James P. Wood & Co., Philadelphia i

HEATING AND VENTILATING.
Smith & Anthony Stove Co., Boston, Mass vi

HELIOTYPE PROCESS.
Heliotype Printing Company, Boston x

HINGES.
M. W. Robinson, New York xiv

HINGES (SPRING).
American Machine Co., Philadelphia 2
Van Wagoner & Williams Co., New York xxiv

HOTEL.
L. U. Maltby vii

INSURANCE.
American Fire Ins. Co xii
Hanover Fire Ins. Co v
Insurance Co. of North America, Phila iv
United States Mutual Ins. Co., New York x

IRON ROOFING.
Cincinnati Corrugating Co., Cincinnati xviii

IRON-WORK (ARCHITECTURAL).
Bartlett, Hayward & Co., Baltimore i
Boston Bridge Works iv
T. H. Brooks, Cleveland v
Carnegie Bros. & Co., Pittsburgh, Pa xix
Cheney & Hewlett, New York xix
Composite Iron-Works Co., New York xiv
Cooper, Hewitt & Co., New York xx
Samuel J. Creswell, Philadelphia xviii
J. B. & J. M. Cornell, New York xix
J. G. & T. Dimond, New York xix
Manly & Cooper M'f'g Co., Phila xix
McHose & Lyon, Dayton, O xix
John Merry, New York xix
Mesker & Bro., St. Louis, Mo xix
A. Northrop & Co., Pittsburgh, Pa xix
Passaic Rolling Mill Co., Paterson, N. J xix
Phœnix Iron Co., Philadelphia xix
Pottsville Iron & Steel Co xix
Snead & Co., Louisville, Ky xix
Union Foundry and Pullman Car Wheel Works, Chicago, Ill xix
Wallis Iron Works, Jersey City, N. J xix
J. P. Walton, Cincinnati, O iv

KILNS.
W. D. Thompson, New York ii

LINCRUSTA-WALTON.
Fr. Beck & Co., New York xii

LOCKS.
Yale & Towne M'f'g Co., Stamford, Conn xxiv

LUMBER.
W. M. Dwight & Co., Detroit, Mich iii

LUMBER (HARDWOOD).
The E. D. Albro Co., Cincinnati, O xi

MACHINERY.
Goodell & Waters, Philadelphia x

MACHINERY (CORNICE).
Calvin Carr Machine Co., Newark, N. J x

MACHINERY (LAUNDRY).
Troy Laundry Machinery Co., Troy xxiv

MAIL CHUTES.
Cutler M'f'g Co., Rochester, N. Y xiv

MANTELS.
A. H. Andrews & Co., Chicago xi
Henry Dibblee, Chicago iii
Joseph S. Miller & Bro., Philadelphia vii
A. Steinmetz & Co., Philadelphia 4

MANTELS (SLATE).
Fischer, Leaf & Co., Louisville, Ky vi

MARBLE. S. Klaber & Co., New York xvi

MARBLE-WORKERS.
A. L. Fauchere & Co., New York ii
Robert C. Fisher, New York i

METAL-WORK (ART).
Tahanto M'f'g Co., Boston iv

METAL-WORKERS.
J. & R. Lamb, New York ii

MINERAL WOOL.
U. S. Mineral Wool Co., New York x

MORTAR BLACK. Henry D. Dupee, Boston xxii

MORTAR COLORS.
American Soapstone Finish Co., Providence, R. I iv
Samuel H. French & Co., Philadelphia iv
McIlvaine Bros., Phila xxii

OILS. Robert Colgate & Co., New York v

PAINT.
Atlas Paint Co., Pittsburgh, Pa xviii

PAINT (FIRE-PROOF).
Chicago Fire-proof Paint Co., Chicago xviii

PENS.
The Esterbrook Steel Pen Co. New York ix

PHOTOGRAPHS.
Albert Levy, New York ix
J. W. Taylor, Chicago, Ill i

PIPE-COVERING.
The Chalmers-Spence Co., New York vii

PUMPS (STEAM).
H. R. Worthington, New York and Boston v

RADIATOR (STEAM).
Detroit Steam-Radiator Co., Detroit, Mich viii

RAILINGS.
Champion Iron Fence Co., Kenton, O xix

REFLECTORS.
L. P. Frink, New York xii

REGISTERS.
Tuttle & Bailey Man'f'g Co., New York and Boston vii

ROOFING MATERIALS.
Bodine Patent Roofing Co., Mansfield, O xviii
Granite Roofing Co., Phila xviii
Merchant & Co., Phila xviii
N. E. Felt Roofing Co., Boston xviii
Penn Roofing Co., Philadelphia 3
H. F. Watson, Erie, Pa xviii

ROOFERS.
John Farquhar's Sons xii
R. Philip Gormully, Chicago xviii
Knisely & Miller, Chicago, Ill xviii

RUBBER GOODS.
N. Y. Belting & Packing Co., New York ix

RUGS. H. A. Hartley & Co., Boston i

SANITARY SUPPLIES.
Myers Sanitary Depot, New York xxiv

SASH-CHAINS. Thomas Morton, New York viii
Smith & Egge M'f'g Co., Bridgeport, Conn ix

SCENERY (THEATRICAL).
Lafayette W. Seavey, New York xxiv

SCHOOLS (ARCHITECTURAL).
Cornell University, Ithaca, N. Y xvi
Institute of Technology, Boston xvii

SCREENS.
American Screen Co., Brookline, Mass xi

SEWER-GAS TRAP.
B. P. Bower & Co., Cleveland xxi

SEWER PIPE.
Akron Sewer Pipe Co. Akron, O xxii

SHINGLE STAINS.
S. Cabot, Jr., Boston v

SHUTTERS.
Clark, Bunnett & Co., New York xxiv

SHUTTER-WORKER.
C. S. Kempton, New York 4

SKYLIGHTS, ETC.
Bickelhoupt Bros., New York viii
G. Hareu, New York viii
S. J. Pardessus, New York viii
John Seton, Brooklyn viii
E. Van Noorden, Boston viii

SLATE.
T. F. & J. A. Hayden, St. Louis, Mo xviii
Story & Wilbur, Boston xviii

SNOW-GUARDS. John H. Hiller, Boston xii

SOAPSTONE FINISH.
American Soapstone Finish Co., Providence, R. I xv

STABLE FITTINGS.
Samuel S. Bent & Son, New York xvii

STATUARY (BRONZE).
National Fine Art Foundry, New York xviii

STONE (BUILDING).
Hallowell Granite Co., Bedford, Ind xxi
Lake View Terra-Cotta Co., Chicago xxiii
M. H. St. John, New York xxi
Ohio Building Stone Co., Cleveland i
G. P. Sherwood, New York xxi
Wm. Struthers & Sons, Philadelphia iii
Thomlinson & Reed, Chicago xxi

STOP-COCK.
Thos. Kelly & Bros., Chicago, Ill xxi

TAPESTRIES.
C. S. Samuel & Co., New York iii

TERRA-COTTA.
Baltimore Terra-Cotta Co., Baltimore, Md xxiii
Boston Terra-Cotta Co xxiii
A. Hall Terra-Cotta Co., Perth Amboy xxiii
Lake View Terra-Cotta Co., Chicago, Ill xxiii
Northwestern Terra-Cotta Wks., Chicago xxiii
Indianapolis Terra-Cotta Co., Ind'polis xxiii
H. A. Lewis, Boston xxiii
Perth Amboy Terra-Cotta Co xxiii
Young O. Wilson & Son, Baltimore, Md xxiii

TILES.
American Encaustic Tiling Co., New York i
T. Aspinwall & Son, New York i
Alfred Boote, New York ii
Caryl Coleman, New York iii
Henry Dibblee, Chicago iii
J. G. & J. F. Low, Chelsea, Mass iii
Miller & Coates, New York i
Fernando Miranda, New York i
Sharpless & Watts, Philadelphia ii
U. S. Encaustic Tile Co., Indianapolis i

TRANSOM LIFTER.
F. A. Reiher & Co., Chicago xi
J. F. Wollensak, Chicago xi

TRAPS. Jas. Barrett, Boston xxi
Jas. Connolly, Brooklyn, N. Y xx

TYPE-WRITING.
Mary Seymour, New York xiv

URINALS.
W. W. Perrine, New York xx

VARNISH. Parkers Gillespie, New York xvi

VALVES AND PACKING.
Jenkins Brothers, New York xii
Washburn & Moore, Yonkers, N. Y xx

VANES. Thos. W. Jones, New York xvii

VAULT LIGHTS.
Dauchy & Co., Chicago xiv

VENTILATION.
Globe Ventilator Co., Troy, N. Y viii

WALL PAPER.
C. H. George, New York iii

WANTED, *American Architect* xiv

WATER-CLOSETS.
Hartford Sanitary Plumbing Co., H'f'd xx
J. L. Mott Iron Works, New York xxi

WATER COLORS.
J. Marsching & Co., New York ix

WATER-PROOFING.
Theodore Hunt, St. Louis, Mo xxii

WIRE LATHING, ETC.
Clinton Wire Cloth Co., Clinton, Mass v

WIRE-WORK
Ludlow-Saylor Co., St. Louis, Mo v

WIRE AND IRON WORK.
National Wire & Iron Co., Detroit Mich xvi

WOOD FINISH.
Bridgeport Wood Finishing Co., New York 3

WOOD TURNING.
N. Y. Wood Turning Co., New York 3

Roofing Materials.

FOR SKATING RINKS,

Or other structures requiring a light roof and one possessing all other desirable qualities, there is no material which compares with

THE BODINE PATENT ROOFING.

Write for samples, prices and estimates,

THE BODINE ROOFING COMPANY - - - Mansfield, Ohio.

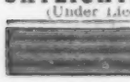
R. PHILIP GORMULLY,
MANUFACTURER OF
GALVANIZED-IRON CORNICES,
WINDOW-CAPS, VENTILATORS, FINIALS, ETC.
Tin, Slate and Corrugated-Iron ROOFING.
PATENT FIRE AND WATER-PROOF
Metallic Skylights.
228 and 230 Michigan Street, Chicago.

T. F. & J. A. HAYDEN,
WHOLESALE DEALERS IN
ROOFING SLATE
Cor. Twelfth and Locust Sts. St. Louis, Mo.

STORY & WILBUR,
Formerly A. Wilbur & Co. (Established 1821.
EMPORIUM FOR
ROOFING SLATES
We have the entire production of
MERRILL'S
BROWNVILLE (MAINE) SLATE
ALSO THE
MONSON (MAINE) SLATE,
Both of which are Black and Unfading and the standard Slate of the market. Used by all Boston architects for first-class buildings, and the cheapest slate n the market for the quality. Also,
WELSH, BANGOR PENNSYLVANIA, STAR PENNSYLVANIA, BLACK DIAMOND PURPLE and GREEN SLATES
Roofing-Tin, Zinc, Solder, Nails, Elastic Cement, Rozin-Sized, Tarred and Dry Felts.
RED SLATES.
Our stock of Slates embraces over 20,000 squares, of all grades and prices. Particular attention to shipments by vessel or rail, for export or home trade.
Special rates by car-loads from quarries.
Inquiries promptly answered.
Slate Wharves, 529 Commercial St.,
Joseph Story. BOSTON. S. A. Wilbur.

KNISELY & MILLER
68 to 74 Monroe Street, Chicago,
(Send for Illustrated Catalogue.)
Slate, Tin & Iron Roofers.

MANUFACTURERS OF
GALVANIZED IRON CORNICES.
THE HAYES PATENT SKYLIGHTS.
(Under License.)


CORRUGATED IRON FOR ROOFING, &c.

NEW ENGLAND
Felt Roofing Co.
22 Milk St., Boston.
Originators of Felt Roofing in New England.
Inventors and only Manufacturers of the Celebrated
"BEEHIVE BRAND."

H. F. WATSON,
Manufacturer of
BUILDING PAPERS,
ROOFING MATERIALS, ETC.
Deafening Felt, Water-Proof Sheathing, Packing Paper, etc. Mills at Erie & Fairview, Pa.
Price List and Sample book furnished upon application. Lowest rates of freight to all points.

A Reliable Ready-mixed
FIRE-PROOF PAINT.
t is durable and protects from Fire and Decay.
"We have tested and used it on our factory, and consider it a good thing." Wm. B. Phillips, Pres. Goes & Phillips Manuf'g. Co., Chicago, Ill.
CHICAGO FIRE-PROOF PAINT CO.,
89 RANDOLPH ST., CHICAGO, ILL.

GRANITE ROOFING.
(PATENTED.)
For steep or flat roofs, Felt and Burlap combined and granitized; a finished roofing, easy to lay; Strong, elastic, durable and cheap. Best roof for Iron-works. Acids and sulphur have no effect on it. Send for circular and sample.
THE GRANITE ROOFING CO.,
15th and Washington Ave., PHILADELPHIA.

THE CINCINNATI
CORRUGATING COMPANY,
CINCINNATI, OHIO.
Superior Iron Roofing, Siding, Ceiling, Arches. Most Economical, Durable and Effective.
Send for our Illustrated Catalogue.

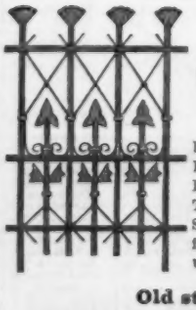
PAINTERS, ROOFERS, BUILDERS, SEE!
CHEAP, HANDSOME, AND DURABLE IRON OXIDE PAINTS.
Bright Red, Red, Brown, Purple, Drab, etc.
Dry Paints, 1½ cents to 2 cents per lb. Ground in Oil, 4 cents to 5 cents per lb; Ready Mixed, 50 cents, 60 cents and 75 cents per gallon; ASPHALTUM BROWN ROOFING PAINT, 30 cents per gallon. Free on Cars in Kegs, Half barrels and Barrels. Color Cards Furnished, order direct from largest manufacturers in the U. S.
ATLAS PAINT CO., Pittsburgh, Pa.
(P. O. Drawer 260.)

Iron-Work.

NATIONAL
Fine Art Foundry,
218 East 25th Street, New York.
ARTISTIC BRONZE DECORATION
for Buildings, Monuments, and Altars.
Architects' Designs executed, and designs furnished for special subjects.
Artistic Monuments in Granite and Bronze.

SAMUEL J. CRESWELL,
IRON WORKS,
Twenty-third and Cherry Streets,
PHILADELPHIA, PENN.
Fronts for Buildings, Columns, Girders, Wrought-Iron Beams, Sidewalk Lights, Drinking-Fountains, Garden Vases, Stairs, Crestings, Stable Fixtures, Lamp-Posts, Railings

MERCHANT & CO.,
IMPORTERS OF THE
"GILBERTSONS OLD METHOD"
ROOFING PLATES.
"GILBERTSONS OLD METHOD ROOFING PLATES," GUARANTEED by the MAKER equal in quality and coating to any plate offered to the PUBLIC.
THE "GILBERTSONS OLD METHOD" is manufactured by the same method as the so-called Old-Style, Old-Process, Re-dipped or Double-Coated &c., &c.
Those who wish to use a strictly first-class HEAVY-COATED ROOFING PLATE in every particular should use this BRAND.
Write for prices. Order a sample box.
525 Arch St., PHILADELPHIA. 90 Beekman St., NEW YORK.

DAVID PETTIT & CO.,
1130 and 1132 Ridge Avenue,
PHILADELPHIA, PA.

Manufacturers of
—PATENT—
Wrought Iron Fences
For Public and Private Buildings and Cemetery Lots. Also Galvanized Tubing, Gates, Ornaments, Settees, Chairs, Vases, etc. for cemetery lot enclosures.
Old stand of
ROBERT WOOD & CO.

Iron-Work.

J.B.&J.M.CORNELL,

MANUFACTURERS OF

IRON

COLUMNS, LINTELS,

AND

GIRDERS,

DEALERS IN

BEAMS AND CHANNELS.

141 CENTRE ST., NEW YORK.

POTTSVILLE IRON AND STEEL CO.,

POTTSVILLE, PENNSYLVANIA.

MANUFACTURERS OF

BEAMS, CHANNELS, ANGLES, TEES AND PLATES,

For Use in the Construction of

FIRE-PROOF BUILDINGS, BRIDGES, WROT-IRON ROOF TRUSSES and CONSTRUCTED GIRDERS. SHAFTING and BAR IRON.

Book of Details furnished on Application.

JOHN MERRY, Manufacturer of the

"LION" and "PHŒNIX" BRANDS of GALVANIZED SHEET-IRON.

And dealer in all grades of black Sheet-iron. Corrugated-iron for Roofing or Siding, Tin Plates, Solder, Sheet Zinc, Slating and Roofing Nails, Tinned, Galvanized and Blocked. All kinds of iron work galvanized or tinned to order.

537 to 547 West 15th Street, NEW YORK.

McHOSE & LYON, Dayton, Ohio,

ARCHITECTURAL IRON WORKS.

IRON FRONTS FOR BUILDINGS,

Columns, Girders, Wrought-Iron Fencing, Wrought-Iron Bridges, Iron Stairs. All kinds of Iron-Work used in Buildings. Grey Iron Steam-Fittings.

Designs and Estimates furnished on application.

CHAMPION IRON FENCE CO. KENTON OHIO.

Greatest variety of **IRON FENCES** and finest variety of

CAST & MALLEABLE IRON CRESTING

in the United States. Send for 120 page Catalogue.

Passaic Rolling Mill Co.

PATERSON, N. J.

SOLID ROLLED BEAMS,

Channels, Angles, Tees and Merchant Iron.

New York Office, Room 45, Astor House.

NORTHROP'S

PATENT PANELED IRON CEILING.

DURABLE, HANDSOME AND FIRE-PROOF.

Will not stain or crack off as plaster, or warp and burn as wood.

NORTHROP'S PAT. CAP-SEAM IRON ROOFING.

Over 3,500,000 square feet used in the past ten years. Suitable for all classes of buildings.

Is never out of repair. Address,

A. NORTHROP & CO., 97 1ST AVE., PITTSBURGH, PA.

Union Foundry and Pullman Car-Wheel Works,

N. S. BOUTON, Pres't.

Architectural Iron-Work a Specialty.

Dealers in Beams, Channels, Angles, and Shapes, both Iron and Steel. Correspondence solicited and prices given on all classes of Iron-Work.

Established 1852. Office, 164 Dearborn St., CHICAGO.

THE SNEAD & CO.

IRON WORKS,

Louisville, Ky.

Manufacturers of every description of

Structural and Ornamental Iron Work.

Iron Buildings,	Store Fronts,
Iron Roofs,	Riveted Girders,
Jail-Work,	Bank-Vaults,
Columns,	Stairways,
Railings,	Gates,
Verandas,	Crestings,
Skylights,	Sash-weights,
Air-Grates,	Bolts,
Sidewalk-lights,	Blacksmithing.

Contracts taken in any part of the country.

Union Spring Hinges

ARE

SIMPLE, EASILY SET,

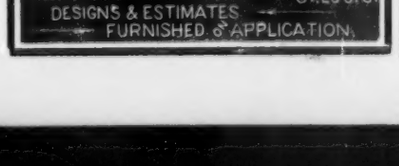
CANNOT BE PUT ON WRONG.

They work either way, right or left. All sizes. Single or double acting.

For Wire Screens or Light Doors, they have no equal.

Send for Price List.

M. W. ROBINSON, Sole Agent, 79 Chambers St., New York



J. G. & T. DIMOND,

Architectural Iron - Works.

ESTABLISHED 1852.

209 & 211 West 33d St., New York.

IRON

BUILDINGS,

ROOFS, FRONTS,

BEAMS, GIRDERS,

STAIRS, COLUMNS,

RAILINGS, etc., etc.

Special attention given to ornamental Wrought-Iron Work.

THE

PHŒNIX IRON COMPANY,

410 Walnut St., Philadelphia, Pa.

Manufacture Rolled Beams, Channels Angles, Tee, Shape and Bar Iron of all sizes.

Roof Trusses, Girders, and Joists for fire-proof buildings framed and fitted as per plans.

PHŒNIX Wrought-Iron Columns of all sizes.

Die-forged Weldless Eyebars a specialty Designs and estimates furnished.

Boston Agents, FRED. A. HOUDLETTE & CO., 272 Franklin Street.

New York Agents, MILLIKEN & SMITH, 95 Liberty Street.

CHENEY & HEWLETT,

Architectural Iron Works.

Wrought and Cast Iron Work for Building Purposes.

N. CHENEY. C. HEWLETT. } OFFICE: { 201 BROADWAY, New York.

Works: Greenport, L. I.

WALLIS IRON WORKS.

Manufacturers of the

PERKINS PATENT

Fire-Proof Double Iron Shutters & Doors

For Stores and Warehouses.

Tested and recommended by underwriters throughout the United States. Catalogue with reports of tests mailed on application.

7 to 11 Morris St., Jersey City, N. J.

Rolled and Drawn Steel Hand Rail, in 20 Foot Lengths.

Ornamental Iron Works.

MANLY & COOPER MANUF'G CO.

ELM AVENUE AND 42d STS., PHILADELPHIA.

BRIDGE RAILINGS
JAIL AND BANK WORK
GRILLS, ANDIRONS
SHUTTERS, DOORS, &c.

Railings, Gates, &c. for Residences and Public Institutions.

Special facilities for the manufacture of FORGED *and* PLANED *Wrought Iron Work for Interior Decorations.* Send for Catalogue.

CARNEGIE BROS. & Co. LIMITED.

UNION IRON MILLS.

DEPARTMENT

BRANCH OFFICE, 33rd ST.

PITTSBURGH, PA.

MANUFACTURERS OF

WROUGHT IRON BEAMS,

CHANNELS, TEES, ANGLES,

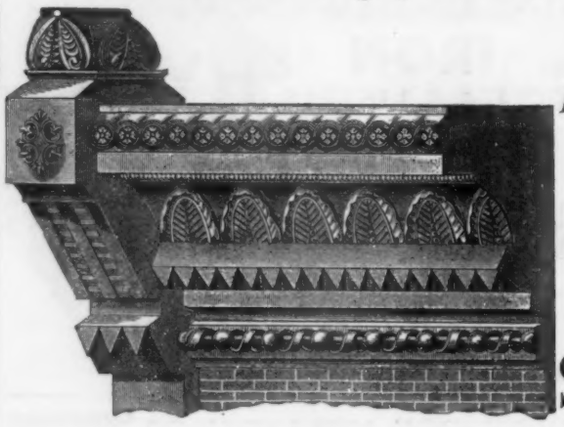
STRUCTURAL & BRIDGE IRON.

LITHOGRAPH OF SECTIONS AND BOOK OF DETAILED INFORMATION FURNISHED ENGINEERS AND ARCHITECTS ON APPLICATION.

Iron-Work.

N.J. STEEL & IRON CO.
TRENTON, N.J.
ROLLED IRON BEAMS,
CHANNELS, ANGLES & TEES.
COOPER, HEWITT & CO.
NEW YORK.

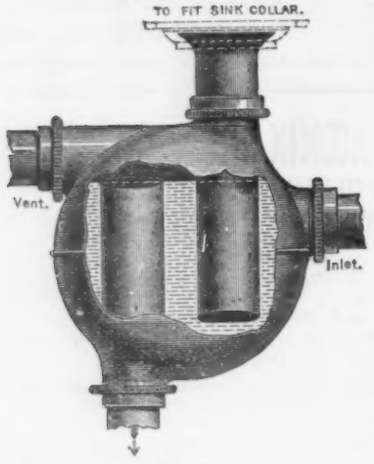
GALVANIZED IRON CORNICES
Window-Caps, Finials, Etc.,



—AND—
Architectural
Sheet Metal
ORNAMENTS
AND
Statuary,
And Spun Brass, Copper, and Zinc Work.
Manufactured by **BAKEWELL & MULLINS,**
SALEM (Col. Co.), OHIO.
Architects, Builders, and Cornice-Makers should send for our New Illustrated Catalogues.

Sanitary Supplies.

The Connolly Patent Globe Trap.



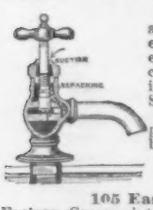
(Fig. 5.)

Perfect security against Sewer-Gas. Approved by the highest sanitary authorities. The Connolly Trap is especially adapted where other traps cannot be ventilated without damaging walls and ceilings. May be had of any plumber. Annealed glass, copper and lead. Tested and proved to be positively *non-siphoning* by the Engineers of the Boards of Health of New York and Brooklyn. Send for catalogue with sixteen styles to
J. CONNOLLY, 352 Adams St., Brooklyn, N. Y.

WEAVER'S
PERFECTION

BASIN-WASTES
EXCEL ALL OTHERS
in the following points: "They leave the bowl free and clear." "They cut off all impurities of the vent-pipe." "They prevent clogging of strainers." "They are simple and inexpensive."
SIMPLE!
EFFECTIVE!
DURABLE!
Send for full descriptive circular to the manufacturer,
H. M. WEAVER - Mansfield, Ohio.
MYERS SANITARY DEPOT,
94 Beekman St., N. Y. City, Gen'l Eastern Agts.

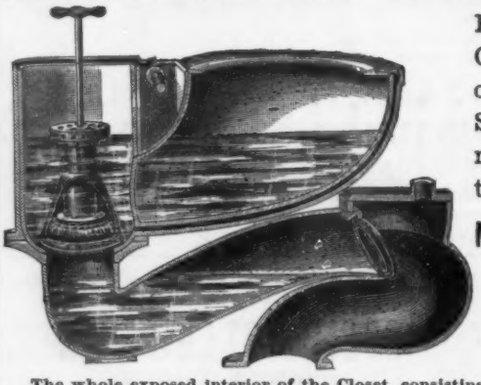
THE "EJECTOR" FAUCET.



Endorsed by the plumbing trade and Architects as the best faucet ever made. Simple, durable, inexpensive, non-leaking. Basin cocks a specialty. Our self-closing work is the best in the world. Sold by plumbers only.
Hose bibbs made on this principle, fitted with stuffing-box for back-pressure, superior to anything in the market.
RENTON BROS.
105 East 9th Street, N. Y.
Factory, Greenpoint, L. I. New York depot for the Kelly "Chicago Stop and Waste Cock."

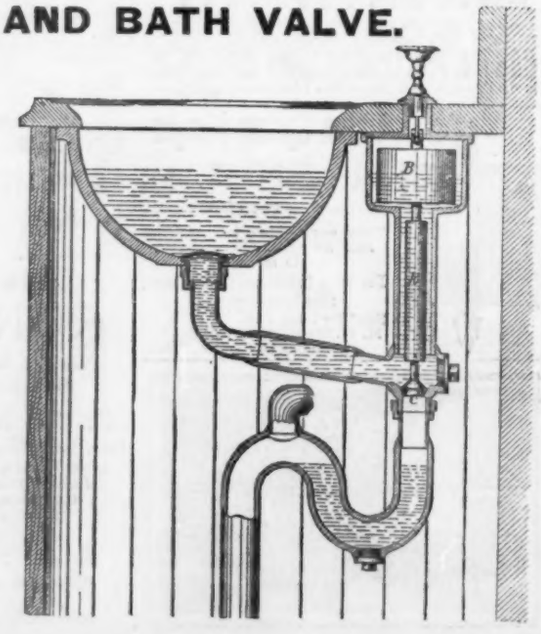
Sanitary Supplies.

THE HARTFORD GLASS WATER-CLOSET



Excels every other Water-Closet made in this or any other Country in Neatness, Safety for Health, Sweetness, and Perfect Construction and Operation.
Metal Check-Valves combined with Water-Traps to Exclude Sewer-Gas.
Every Closet Warranted.
The whole exposed interior of the Closet, consisting of the Bowl, Stand-Pipe, Float-Tank and Float, are made of blown Opaque Glass of the best quality. GLASS WILL NOT CRAZE, is impervious to moisture, uric acid, or any of the oxides of the metals and pipes composing the closet or Supply-Pipes. Nothing in or about the water-closet affects the glass, and the smooth surface prevents any adherence of filth. Manufactured by the
HARTFORD SANITARY PLUMBING COMPANY.
☞ SEND FOR *ILLUSTRATED* AND DESCRIPTIVE CATALOGUE.
MANUFACTORY AND OFFICE, 70 to 86 MARKET ST., HARTFORD, CONN.

C. H. Moore's Patent No-Overflow
BASIN AND BATH VALVE.
Manufactured by
WASHBURN & MOORE M'F'G CO.,
Yonkers, N. Y.
Shuts out sewer-gas with a solid plug, and prevents the siphoning of trap.
DESCRIPTION.
C represents a solid brass valve, ground to the outlet perfectly tight, preventing the escape into the room of any gases from the sewer-pipe, and making it impossible for water to either siphon or evaporate from the trap. *B* shows a float which, upon any increase of water in the basin above the dotted lines shown, rises and lifts the valve *C* from its seat, and permits the water to escape under it and into the waste-pipe as fast as it enters the basin. There is no overflow-pipe, or plug and chain, used in the basin. The valve *C* retains water in the basin, which is emptied by lifting the handle that projects through the slab.



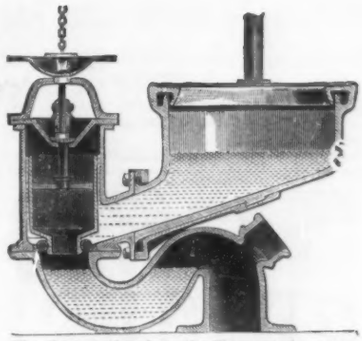
Sanitary Supplies.

DEMAREST'S PATENT
Side-outlet, Flushing-rim, Cistern Water-Closet,
THE "HYGEIA."

We take great pleasure in calling the attention of all interested in sanitary matters to the "Hygeia." For perfect cleanliness and simplicity of construction we invite comparison with any cistern closet ever made, either of home or foreign manufacture. In short, we think as do those who have used this closet in all their fine work during the past two years, that it is *par excellence*, ahead of anything yet made in the way of a water-closet. The workmanship is of the very best kind, nothing being spared to make it a strictly first-class article in every respect, which, taken in connection with the very moderate price at which we sell it, cannot fail to place it ahead of all others in the market.

Complete Illustrated Circulars sent on application.

All our Sanitary Specialties are fitted up with water attached, and may be seen at our show-rooms.

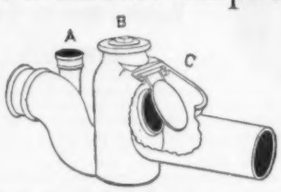


The above section shows the Closet cut through the centre. All the iron-work above the trap (the trap we enamel to order) is enamelled, the Plunger and cover for Plunger section, also the Bridge and lever being galvanized and put together with brass bolts.

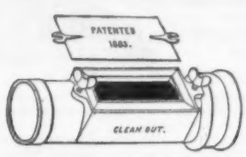
THE J. L. MOTT IRON WORKS,
88 and 90 BEEKMAN STREET, NEW YORK.

Barrett's Latest Improved Traps & Fittings.

Brass Trap, for Sink-Bowls, etc.



Iron Trap, For Sanitary and Back-water purposes.



Iron Clean-out, For Soil and Drain-Pipe.

Brass Urinal Fitting.

The Superiority of Barrett's Improved Sanitary Traps over others now in use is: 1. Simplicity of construction. 2. It does not fill up and remain a filth cesspool. 3. It has a double seal. 4. Siphonage or evaporation has no effect on them. 5. It can be easily examined by removing trap screw. 6. All the working parts and screws are of brass. 7. There is nothing about them to get out of order. 8. It is the best constructed trap of the day. 9. It has a perfect seal without depending on water. 10. It is a sure preventive against sewer gas and back water. 11. It never fails to work. 12. It has all the improvements called for by the ordinances lately adopted by the various cities. 13. It is guaranteed to do all that is claimed for it.

Manufactured by

JAMES BARRETT,

207 Tremont Street,

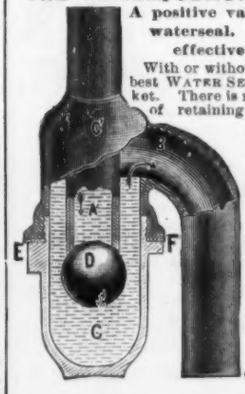
BOSTON - - - - MASS.

☞ Send for Circular and Price List. ☜

Thomas Maddock & Sons, Manufacturers of Sanitary Earthenware, 273 Pearl St., N. Y. W. W. Perrine, Manager. Please mention this paper.

No. 7. — Maddock's Cataract Water-Closet, Slop-Hopper and Urinal combined, with Vent and Flushing-Rim.

THE BOWER SEWER-GAS TRAP.



A positive valve Seal; a sound waterseal. Simple, cheap, effective and durable.

With or without the Valve, it is the best WATER SEAL TRAP in the market. There is no other Trap so sure of retaining its WATER SEAL. None that approximates in it the surety of the VALVE SEAL. The Valve keeps its seat by flotation, and as compared with other Valves in Traps, is little or no resistance to the outflow of water or waste. *Illustrative and descriptive 48-page pamphlet sent free on application.*

B. P. BOWER & CO.
Manufacturers,
CLEVELAND, O.

The Kelly Stop & Waste Cock

to prevent Water-pipes from freezing, and control the water-supply from any point in a building, or as a Self-closing Hopper Cock, or Self-acting Flushing Apparatus for Water-Closets or Urinals.

Send for Catalogue.

THOS. KELLY & BROS, Plumbers,
186 Dearborn St., Chicago, Ill.
N. Y. Depot: RENTON BROS., 105 East Ninth St.

Building Stones.

THOMLINSON & REED,
Quarrymen, and Dealers in
OOLITIC LIMESTONE
Quarries at Avoca, near Bedford, Ind.,
Branch Office:
Cor. Polk and Ellsworth Sts., Chicago.

BEDFORD OOLITIC LIMESTONE,
Buff and Blue.
HALLOWELL CRANITE CO.,
Quarrymen and Dealers in
Building, Sawed, and Rough
DIMENSION STONE.
P. O. Address - - - Bedford, Ind.

Clark's Island Granite Quarries
OF ROCKLAND, ME.

Estimates given for **Building Dimensions and Monumental Work in Granite**, with extra facilities for dispatch and beauty of finish.

M. H. St. JOHN,
Owner and Proprietor.
Office: 83 and 84 Astor House, New York.

Dorchester, (New Brunswick.) Yellow.
FREESTONE.
Corsehill, (Scotch.) Red.
FREESTONE.
G. P. SHERWOOD, **24 Pine St., New York.**

Masons' Supplies.

AKRON SEWER PIPE CO., AKRON, OHIO.

MANUFACTURERS OF

STANDARD

Akron Salt-Glazed

SEWER PIPE

The superior quality of the pipe manufactured by this Company have given national reputation to Akron Sewer Pipe, which has been acquired solely by this Company's efforts to make the best article offered to the public. Be sure to order the Standard to secure the pipe which has made the reputation

Agencies for the sale of our Akron Pipe in all the Principal Cities of the United States.

For further information address F. W. ROCKWELL, Secretary, Akron, Ohio.

New England Agents, FISKE & COLEMAN, 62 Congress Street, Boston, Mass.

"The Best is the Cheapest"

For quality we refer by permission to the following eminent Civil Engineers

Mr. E. S. CHESBROUGH, *City Engineer, Chicago,*

Mr. J. W. ADAMS, *Sanitary Eng'r, Brooklyn, N. Y*

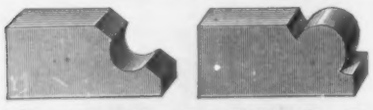
Mr. J. HERBERT SHEDD, *Late Chief Eng'r Providence Water Works, Providence, R. I.*

Col. GEO. E. WARING, Jr., *Newport, R. I.*

Mr. W. H. BRADLEY, *Sup't Sewers, Boston, Mass.*

Mess. W. S. & ALF'D EGERTON, *Engineers in Charge of Parks, Albany, N. Y.*

Mr. W. W. WILSON, *Chief Engineer and Superintendent Yonkers Water Works, Yonkers, N. Y.*



BRICKS!

THE HYDRAULIC

PRESS BRICK CO.

ST LOUIS, MO.

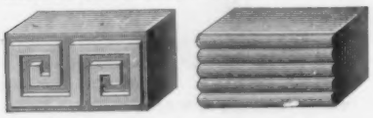
Make a Specialty of Ornamental & Plain

Red Front Pressed Brick,

Manufacturing Annually over

TEN MILLIONS.

They guarantee that the **quality, finish** and **Color,** are **unsurpassed,** if **not unequalled** by any other bricks made in the United States.



CHICAGO ANDERSON PRESSED BRICK CO.

157 Lasalle Street, CHICAGO, ILL.

FRONT & ORNAMENTAL Pressed Brick.

Best Brands of English and Continental

Portland Cements.

K. B. & S. English, Lafarge French,
Burham English, Lime of Teil,
Fewer German, Keene's Fine,
Jossan Antwerp, Keene's Coarse.

IMPORTED BY

JAMES BRAND, 85 BEEKMAN ST.,
NEW YORK.

ROWE & DENMAN,

Masons' Building Materials,

360 West Street, New York.

SOLE AGENTS IN NEW YORK FOR

BURNS, RUSSELL & COMPANY'S CELEBRATED

BALTIMORE FRONT BRICK,

ENGLISH and AMERICAN

PORTLAND CEMENT.

PEERLESS BRICKS.

THE PEERLESS BRICK COMPANY

OF PHILADELPHIA,

MANUFACURES AND KEEPS IN STOCK

ARCHITECTURAL SHAPES, 300 KINDS.

ALSO

RED Pressed Fronts.
Extra fine in color and quality.

BUFF, Solid rich color,— beautiful.
One of the finest bricks made.

DRAB, Handsomer and more durable than stone.

BROWN, Very strong and superior to brown stone.

GRAY, A very desirable shade.

BLACK, Velvety jet face.
The only black brick fit for a fine building, producing a beautiful effect, and free from the glossy and greasy look of other black or dipped bricks.

DIAPERING and ORNAMENTAL
Bricks made in the above colors.

OFFICE:
1003 WALNUT STREET, Philadelphia.

SAMUEL HART, PRESIDENT. JOSEPH WOOD, Jr., TREASURER.

THE PEERLESS BRICK COMPANY

Wish to inform Architects and Dealers that no one is authorized to act as Agent for the sale of our manufactures.

Illustrated Catalogue and Price-List sent free on application.

GABRIEL & SCHALL,

205 Pearl Street, New York,

SOLE IMPORTERS OF

VORWOHLER ASPHALT MASTIC
OF BRUNSWICK (GERMANY).

VORWOHLER PORTLAND CEMENT, OF HOLZMINDEN (GERMANY).

IMPERIAL MORTAR AND CEMENT BLACK.

MOIST MINERAL COLORS.

Prepared in pulp form for coloring mortars.

BLACK,
RED,
BROWN,
and all colors.

Have been in use for the past 12 years.
Send for circular.

McILVAINE BROS., Philadelphia.

ENAMELLED BRICKS

MANUFACTURED BY THE

BRICK ENAMELLING CO.

OF PHILADELPHIA.

THE ORIGINAL MANUFACTURERS

Of Enamelled Bricks in the United States.

Buff, Brown, Black, White, and Light Blue Bricks

ALWAYS IN STOCK.

All Colors,— On Edge,— $70.00 and $75.00 per 1,000. Net Cash, F. O. B.

If packed in barrels, an additional charge of $5.00 per 1,000.

The attention of architects and builders is called to the fact that these bricks, having an Enamelled Surface, are far superior in durability and finish to the glazed bricks that are offered by other parties.

Samples and pamphlets to be had on application to the office,

No. 140 South Fourth St., Philadelphia, Pa.

TRADE ★ MARK.

The "STAR" Portland Cement Works,

Toepffer, Grawitz & Co., Stettin, Germany.

ESTABLISHED 1860,

Guarantee their entire production (about 240,000 barrels a year) to have the following **Minimum-Tensile-Strength,** if tested according to the official German regulations, on non-absorptive beds:

		Minimum Breaking Strain.		
Neat "Star" Cement	7 Days' test.	40 kilos.	per square centimetre.	per English square inch.
do do	28 " "	80 " "		711.1
1 Cement and 3 Standard Sand	7 " "	15 " "		213.3
do do	28 " "	30 " "		284.4
1 Cement and 6 Standard Sand	7 " "	6 " "		85.3
do do	28 " "	10 " "		142.2

Send for Testimonials, Pamphlet, Directions for Testing, etc.,

Gustav Grawitz, 165-7 Broadway, N. Y., Sole Agent in the U. S.

SINCLAIR & BABSON,

IMPORTERS OF

PORTLAND CEMENT,

105 John St., New York.

Brands, O. F. ALSEN & SONS, and K. B. & S.

Send for Practical Treatise on Cement.

WATER-PROOFING

FOR WALLS

Renders brickwork permanently non-absorbent, prevents weather stains and crumbling mortar-joints; also prevents disintegration of stone without altering the appearance. Can be proved reliable. State-rights for sale under the patent. For full particulars apply to

THEODORE HUNT, 413 North 12th St., St. Louis, Mo.

WALPOLE MORTAR BLACK.

THE ORIGINAL.

The best in use and the only one that has stood the test of time. It improves the mortar, and is cheaper and better than Lampblack. Beware of imitations and use only the "Walpole."

HENRY D. DUPEE, Proprietor,
44 to 46 Oliver Street, Boston,

PROVIDENCE, R. I. Manchester & Hudson, Agents.
NEW YORK. Candie & Smith, foot E. 26th St. Ag'ts.

Fire-proof Building.

THE WIGHT FIRE-PROOFING COMPANY,

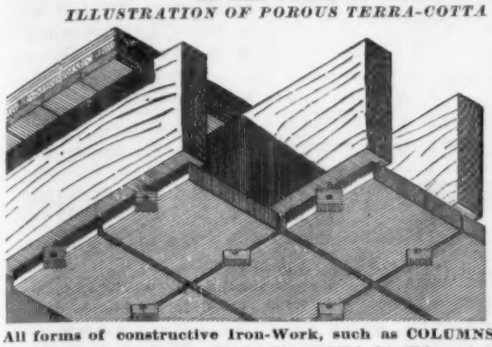
202 La Salle St., CHICAGO, **60 William St., NEW YORK.**

CONTRACTORS FOR ALL KINDS OF FIRE-PROOF WORK IN

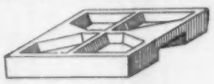
Porous Terra-Cotta and Hollow Fire-Clay Tiles

IN ALL PARTS OF THE UNITED STATES.

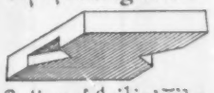
ILLUSTRATION OF POROUS TERRA-COTTA FIRE-PROOF CEILING.



500000 feet of this ceiling have been put up in Chicago, Milwaukee and Cleveland, and it is now being put in the American Bank-Note building, New York.



Top of Ceiling Tile.



Bottom of Ceiling Tile.

Patented April 16, 1878, and March 6, 1883.

All forms of constructive Iron-Work, such as COLUMNS, GIRDERS, and ROOF TRUSSES covered with POROUS TERRA-COTTA and left ready for plastering. Partitions, Furring and Roofing Furnished and Set.

FIRE-PROOF BUILDING MATERIALS.

Raritan Hollow and Porous Brick Company,

Manufacturers of Hollow Burnt-Clay Bricks and Porous Terra-Cotta Bricks,

For Floors, Ceilings, Partitions, Furring, Roof-Lining, Column Fire-Proofing, etc.

Office: 115 BROADWAY, New York. Factory, Raritan River, near Perth Amboy, N. J.

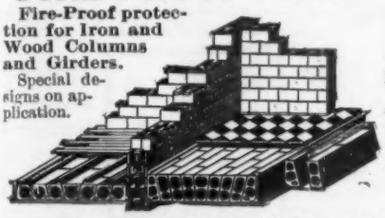
EDWARD KEASBEY, Pres't. J. C. ROSSI, Sup't. H. M. KEASBEY, Sec. and Treas.

Boston Agents: FISKE & COLEMAN, 62 Congress Street.

☞ Estimates Furnished. Builders Supplied. Send for Illustrated Catalogue. ☜

FIRE-PROOF HOLLOW BUILDING TILE

Fire-Proof protection for Iron and Wood Columns and Girders. Special designs on application.



FOR THE INTERIOR

CONSTRUCTION OF BUILDINGS,

Great strength, combined with saving in space, and weight, is obtained by the use of our system of

Hollow Tile Floors, Partition Walls, Roofs, Ceilings, Etc.

Contracts taken for the erection of HOLLOW, SOLID and POROUS TILE-WORK in any part of the United States.

PIONEER FIRE-PROOF CONSTRUCTION CO.,

32 METROPOLITAN BLOCK, CHICAGO.

Formerly THE OTTAWA TILE CO.,

MANUFACTURERS AND CONTRACTORS,

Dealers in every description of constructive Tile for Building Purposes.

Send for our descriptive Catalogue, giving full explanations, advantages, references, etc.

GEO. M. MOULTON, Pres't. A. T. GRIFFIN, Vice Pres't. E. V. JOHNSON, Sec'y., Treas. and Gen'l. Man'g'r.

LEONARD F. BECKWITH, Pres't. & Treas. ARTHUR BECKWITH, Sup't. CHARLES E. STREAT, Sec'y.

Established 1873.

THE FIRE-PROOF BUILDING COMPANY,

NEW YORK.

MANUFACTURERS OF FIRE-PROOF BUILDING MATERIALS.

Porous Terra-Cotta Blocks, Hollow Burnt-Clay Bricks and Tell Lime Composition Blocks.

For Arches, Partitions, Furring, Deafening, Roofing, etc.

BUILDERS SUPPLIED.

Office, 229 BROADWAY, (Rooms 12, 13 and 14,) NEW YORK, N. Y.

ESTABLISHED 1856.

HENRY MAURER, Manufacturer of

Fire-Proof Material

Of every description. Hollow Brick made of Clay for Flat Arches, Partitions, Furring, etc. Porous Terra-Cotta, Fire-Brick, etc., etc.

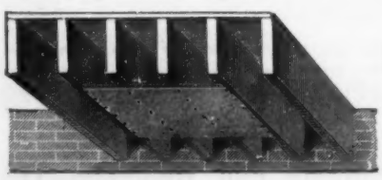
Works, PERTH AMBOY, N. J. **Office and Depot, 420 EAST 23d STREET, New York.**

LYONS' PATENT FIRE-PROOF

BUILDING MATERIAL,

FRANK LYONS, JR., Sole Manufacturer.

Office Room 60, Drexel Building, Cor. Wall and Broad Sts. Works, Nos. 57 to 65 Clason Ave., Brooklyn. New York Telephone, New 387. Brooklyn Telephone, Williamsburg, 391. Mechanics and Traders' Exchange, No. 14 Vesey St. (Box 82).



The above cut shows the method of applying the sheets of fire-proof material to floor timbers, furrings, etc.

FIRE-PROOF.

MAGNESO CALCITE FIRE-PROOF CO.,

BOSTON, MASS.

Manufacturers of Fire-Proof Material for the protection of buildings. Indorsed by the leading Architects of Boston.

Send for testimonials of actual fire tests. Every information given by application to the principal office.

72 SUDBURY STREET, BOSTON.

AUGT. T. CHUR,

Room 14, 5th story, Mills Building, N. York.

Importer of

WILCOCK & CO.'S

Enamelled Brick and Decorative Terra-Cotta.

Leeds, England.

BOCKING & DIETZCH'S

GERMAN PORTLAND CEMENT,

Malstatt, Prussia.

YOUNG O. WILSON & SON,

Manufacturers of

ARCHITECTURAL TERRA-COTTA.

Best Quality of Plain and Moulded Pressed Brick.

Office, 1 N. Paca Street, Baltimore, Md.

Terra-Cotta.

Illustrated Catalogue of 100 pages sent to

ARCHITECTS, BUILDERS and OWNERS,

upon application accompanied by business card.

INDIANAPOLIS

TERRA-COTTA CO.

INDIANAPOLIS, IND.

Manufacturers of

Architectural Terra-Cotta.

Send for estimates.

BALTIMORE

TERRA-COTTA CO.

Office: 30 Columbia St., Baltimore, Md.

MANUFACTURERS OF

ARCHITECTURAL TERRA-COTTA.

MOULDED AND PRESSED BRICK.

PERTH AMBOY

TERRA-COTTA CO.

Nos. 80 and 81 Astor House, New York.

MANUFACTURERS OF

ARCHITECTURAL TERRA-COTTA.

BUFF AND COLORED BRICK, FIRE BRICK.

A. HALL

TERRA-COTTA CO.

Architectural Terra-Cotta, Fire-Brick, Furnace-Blocks, &c.

MOULDED, BUFF, AND COLORED BUILDING BRICK.

Perth Amboy, N. J.

Northwestern Terra-Cotta Works.

TRUE, BRUNKHORST & CO.,

ARCHITECTURAL

TERRA - COTTA.

Works: Corner Clybourn & Wrightwood Aves. **Chicago.** **City Office:** Room 20, McCormick Block

Formerly Cor. W. 15th and Laflin Sts.

Estimates given on application. Send for latest Catalogue, Price-List and Samples.

LAKE VIEW

TERRA-COTTA and Brick CO.

Factory: Cor. 15th & Laflin Sts., **Office:** Room 83, No. 159 Lasalle

CHICAGO, ILL.

Architectural and Horticultural Terra-Cotta

Coping and Chimney-Tops always on hand

TERRA-COTTA

CHIMNEY TOPS,

PHILADELPHIA AND PEERLESS (MOULDED) BRICK,

Akron Drain-Pipe. Portland, Roman, and Rosendale Cements. Hearth Tiles & Chimney-Flue Lining.

WALDO BROS.,

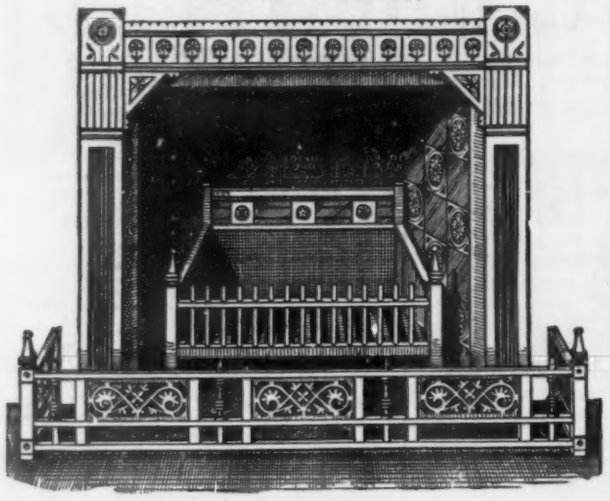
88 Water Street, BOSTON.

WM. H. JACKSON & CO.

(NO CONNECTION WITH ANY OTHER ESTABLISHMENT).

Union Sq., 2d Door from Broadway, (17th St. side)

NEW YORK.



Manufacturers of Artistic Grates and Fenders in Brass, Real Bronze, Steel and Tile

HAVE NO OTHER WAREROOMS

PRIZE MEDALLISTS.

Exhibitions of 1862, 1865, 1867, 1872, 1873, and only Award and Medal for Noiseless, Self-Coiling Steel Shutters at Philadelphia, 1876; Paris, 1878; and Melbourne, 1881.

CLARK, BUNNETT & CO. (Limited)

Late CLARK & COMPANY,

Original Inventors and Sole Patentees of Noiseless

Self-Coiling, Revolving STEEL SHUTTERS Fire & Burglar Proof.

Also, ***Improved Rolling Wood Shutters,*** and ***Clark's Patent Metallic Venetian Blinds.***

The BEST in the Market. Send for Catalogues, etc., to

162 and 164 West 27th St. - - New York.

PARQUET FLOORS.

WM. HANNAM & CO.

7-8 inch tongued and grooved, European Styles, Solid and Substantial. Also 5-16 inch Fancy Wood Carpet Floors.

297 Fifth Avenue, NEW YORK.
Formerly 31 East 17th Street.

PARQUET FLOORS.

The National Wood Manufacturing Co.,

16 East 18th St., New York City.

Manufacturers of

INLAID WOOD FLOORS, 5-16 and 7-8 inch thick.

Designs and estimates on application. Established 1867.

"YALE" LOCKS.

FOR ALL PURPOSES. Catalogues on application.

ADDRESS:

The YALE & TOWNE MANUFACTURING CO., STAMFORD, CONN.

62 Reade St., New York. | 15 N. Sixth St., Philadelphia.
224 Franklin St., Boston. | 64 Lake Street, Chicago.

WHY THE

IS SO POPULAR.

Because it is the Easiest Repaired, Does not collect Dust, Occupies less Room, and can be made to fit any space. It will circulate with steam and return on the same end, and is adapted to high or low pressure. It can be shipped, knocked down, is the handsomest, cheapest, most durable and more in use than any other in the market.

Manufactured by the **A. A. CRIFFING IRON CO.,**

459 Communipaw Avenue, Jersey City, N. J.

Also Manufacturers of the

BUNDY PIN AND GOLD'S PIN INDIRECT RADIATORS.

Architects should specify Bundy Radiators.

Moule's Earth-Closet.

MYERS All China Water-Closet In one piece with Trap combined.

DECECO Siphon Water-Closet and large Stock PLUMBERS' SUPPLIES.

MYERS SANITARY DEPOT,
94 Beekman St., New York.

[Established 1865.]

Scenery for Theatres, Public Halls and Amateurs.

Lafayette W. Seavey, 8 Lafayette Place, N. Y.

KEUFFEL & ESSER, - - New York.

EXCELSIOR TAPES

The best tapes ever offered in this market. Correct, Distinct, Beautifully Marked and Numbered.

Metallic, All-Linen, Steel, &c., &c.

Special Patterns for Special Purposes. Quality Warranted. Write for Circular.

AMERICAN AND GEM

SPRING HINGES.

Bronze, Brass & Iron, In Various Styles, and SUPERIOR Finish.

Send for Catalogue.

VAN WAGONER & WILLIAMS CO., 82 Beekman St., N. Y.

Troy Laundry Machinery Co.,

LIMITED. TROY, N. Y.

Salesrooms: New York and Chicago.

The most complete line of machinery for hotels and Public Institutions. Complete laundries for Institutions our specialty.

Estimates furnished. Send for Illustrated Catalogue.

SAYLOR'S PORTLAND CEMENT.

Strongest, Cheapest, Best, and Always Fresh.

JOHNSON & WILSON, Gen. Agts.,

For Sale by all dealers in masons' materials. **91 Liberty Street, New York.**

Sole Agents for **Styrian Tool Steel,** for the United States and Canada.

Send for New Descriptive Pamphlet.

ARTISTIC GRATES AND FENDERS.

OPEN FIREPLACES.

Direct Importers and Dealers in

Foreign and Domestic Tile

of every description and make, including new and original designs solely our own.

Fire Irons, Andirons, Brass Plaques, Jardinieres, &c.

The largest assortment and most elegant show-rooms in America.

J. S. CONOVER & CO.,

30 West 23d Street, - New York.

Architects, Builders and others will confer a favor on the Publishers by mentioning "*The American Architect and Building News*" when sending for circulars or corresponding with parties advertising in these columns